

Admiral William S. Sims

Commander of the American Naval Forces in European waters



Drawn by Joseph Cummings Chase

General John J. Pershing
Commander-in-chief of the American Expeditionary Forces.

HARPER'S PICTORIAL LIBRARY OF THE WORLD WAR

In Twelve Volumes
Profusely Illustrated

VOLUME IV

THE WAR ON THE SEA

**Battles, Sea Raids and
Submarine Campaigns**

HARPER'S PICTORIAL LIBRARY OF THE WORLD WAR

*In Twelve Volumes
Profusely Illustrated*

FOREWORD BY CHARLES W. ELIOT, Ph.D.
President Emeritus, Harvard University

GENERAL EDITORIAL BOARD

PROF. ALBERT BUSHNELL HART
Harvard University

GEN. DOUGLAS MACARTHUR, U.S.A.
Chief of Staff, 42nd Division

ADMIRAL ALBERT GLEAVES
U. S. Navy

PROF. W. O. STEVENS
U. S. Naval Academy, Annapolis

GEN. ULYSSES G. McALEXANDER
U. S. Army

JOHN GRIER HIBBEN
President of Princeton University

J. B. W. GARDINER
Military Expert, *New York Times*

COMMANDER C. C. GILL, U. S. N.
Lecturer at Annapolis and aide
to Admiral Gleaves

HENRY NOBLE MACCRACKEN
President of Vassar College

PROF. E. R. A. SELIGMAN
Columbia University

DR. THEODORE F. JONES
Professor of History, New York
University

CARL SNYDER

PROF. JOHN SPENCER BASSETT
Professor of History, Smith College

MAJOR C. A. KING, JR.
History Department, West Point

HARPER & BROTHERS PUBLISHERS
NEW YORK AND LONDON

Established 1817

VOL. 4 — HARPER'S PICTORIAL LIBRARY OF THE WORLD WAR

Copyright 1920, by Harper & Brothers
Printed in the United States of America

A-U

CONTENTS OF VOLUME IV

	PAGE		PAGE
<i>Introduction</i> . . . Rear-Admiral H. T. Mayo	vii	The Grand Fleet, August, 1914	97
PART I.—THE NAVAL STRATEGY AND MAJOR NAVAL OPERATIONS OF THE WORLD WAR . . . Commander C. C. Gill		The Battle of Jutland	99
Grand Strategy		The Narrative of the Jutland Battle in Detail	101
I. The Object of War	1	I. First Phase	106
II. The Strategy of Germany	4	II. Second Phase	113
III. The Strategy of the Allies	6	III. Third Phase	115
IV. Germany's Check on Land	7	IV. Fourth Phase	131
V. The Submarine as a Naval Weapon	8	Naval Activities After Jutland	136
VI. A Critical Situation in 1917	10	Why Jutland Battle Was Indecisive	144
VII. Sending Troops from America	11	Moving Our Troops Overseas, Vice-Admiral Albert Gleaves	157
In Mediterranean Waters	12	PART II.—MINOR NAVAL OPERATIONS AND PERSONAL NARRATIVES, William O. Stevens	
<i>Goeben</i> and <i>Breslau</i> Escape	14	<i>Introduction</i>	166
The Dardanelles Operations		Section I.—The Sea Raiders	166
I. The Straits in History	18	The Cruise of the <i>Emden</i>	
II. The Gallipoli Defenses	23	I. A Career of Extraordinary Ad- ventures	167
III. Dardanelles Naval Attacks	27	II. The <i>Emden's</i> Daring Dash into Penang Harbor	178
IV. The Landing at Gallipoli	36	III. Lying in Wait Off the Coast of Sumatra	183
V. Politics Plus Strategy—Cause of the Disaster	53	IV. How the <i>Emden</i> Was Destroyed	187
Naval Forces in the Pacific at the Outbreak of the War	58	The Sequel to the <i>Emden</i>	
The German Navy in the Pacific	59	I. The Landing-party at Keeling Island	190
The Battle of Coronel		II. Outwitting the English	192
I. Comparison of Forces	64	III. Overland March Across the Arabian Desert	193
II. British Admiral Attacks Under Disadvantage	66	IV. A Fight with the Bedouins	194
III. The Battle as Seen from the <i>Gla-</i> <i>gow</i>	67	Other Daring Sea Raiders	
IV. Was Cradock Rash? Should He Have Run Away?	68	The <i>Königsberg</i>	195
The Battle of the Falklands		The <i>Karlsruhe</i>	196
I. Von Spee's Careless Strategy	69	The <i>Meteor</i>	197
II. Sturdee's Official Report	75	The <i>Moeve</i>	197
III. Sturdee's Race to the Falklands	79	The <i>Wolf</i>	198
IV. <i>Leipzig</i> "Blazing Like an Oil Fac- tory"—Then Sinks	80	The <i>Seeadler</i>	198
V. Personal Narrative of an Officer on the <i>Inflexible</i>	82	Duels Between Armed Liners	199
VI. An Admiral's First Cousin Among the Germans Rescued	84	Section II.—The Submarines	
VII. The Ghost Ship	84	The Romance of the Submarine	201
The British Fleet in the North Sea		Submarine Exploits in the War	
I. General Strategy of the Naval Sit- uation	86	Sinking of the <i>Aboukir</i> , <i>Hogue</i> , and <i>Cressy</i>	205
II. Jellicoe on Britain's Naval Weak- ness	93	Lieutenant-Commander Horton and the <i>E-9</i>	207
		<i>E-11</i> in the Sea of Marmora	210

CONTENTS OF VOLUME IV

	PAGE		PAGE
This "Sub" Shelled a Railway Train	211	V. Novelties in Ship Types: The	
Duels Between Submarines	212	Patrol Boats	292
Two "Subs" in a Death Grapple	214	VI. The "Q" Ships	296
Voyage of the <i>Deutschland</i>	214	VII. Anti-Submarine Devices	304
<i>U-53</i> at Work Off Nantucket	216	Section V.—The U. S. Navy in the War	
Submarine Piracy	217	I. New Problems and How to	
The <i>Falaba</i> ; 101 Lives Lost	218	Meet Them	314
Torpedoing of the <i>Lusitania</i>	220	II. Engineering Achievements:	
Loss of the <i>Ancona</i>	223	Electric Welding	319
The <i>Persia</i> Goes Down, Bow in the Air	224	III. The North Sea Mine Barrier	324
<i>Laconia</i> Torpedoed at Night	225	IV. Inventions: The American	
Five Belgian Relief Ships Sunk	229	Depth Charge	330
<i>Alnwick Castle's</i> Passengers Left in an		V. Adventures of Transports in	
Open Boat 320 Miles from Land	230	the War Zone	335
British Sailors Deliberately Drowned	232	VI. Tireless Work of the Destroyers	343
Life on a Submarine	235	VII. The Submarine Patrol	352
"Supermen" on German Submarines	235	VIII. Perils of the Cargo Carriers	354
Fearfully Trying on the Nerves	237	IX. The U. S. Navy in European	
Weakness and Strength of the Sub-		Waters	356
marine	239	Section VI.—Other Navies	
Section III.—Minor Engagements		Naval Work in Many Seas	
Battle of Heligoland Bight	240	Germany	362
Raids on the English Coast	244	Austria	364
The Battle of Dogger Bank		The Russian Navy	364
Battle Cruisers in Action	246	The Navy of Japan	367
The <i>Blücher</i> Torpedoed	247	The Italian Navy	368
The Battle as Seen from a Destroyer	248	The Navy of France	373
A Word-Picture of the <i>Blücher's</i> Agony	249	Sinking of the <i>Léon Gambetta</i>	373
Beatty's Official Report	250	Operations in the Dardanelles	375
Told by a Midshipman	253	"Fusiliers Marins" Drive on Calais	376
Stories of the Jutland Battle	256	Protecting the French Coast	377
Jutland Battle as Seen by the British	258	Section VII.—The Great Surrender	
The Fight as Seen from the Foretop	259	End of Germany as a Sea Power	380
Great Work by the <i>Warspite</i>	260	German Navy in Hands of Mutineers	381
The Raid on Zeebrugge	261	The Surrender Arranged	383
The Official Account of the Zeebrugge		A German Account of the Surrender	385
Affair	262	An American Naval Officer at the Sur-	
As Told by the Third in Command	269	render	387
Section IV.—Naval Developments		"An Unparalleled Humiliation"	390
New Ideas for Warfare on the Sea		An American Reporter on the <i>Texas</i>	394
I. The Return of the <i>Monitor</i>	280	A Navy that Lost Its Morale	398
II. The Navy of the Air: Seaplanes	284	The German Fleet of 1918	399
III. The Kite-Balloons	288		
IV. The Dirigibles	290		

ILLUSTRATIONS IN COLOR

Admiral William S. Sims		Frontispiece
Building a Battleship		Facing page 126
Remember the <i>Lusitania</i>		" 222
Building an Airplane		" 286
After Mess		" 334
The Box from Home		" 366

MAPS IN COLOR

The Dardanelles Campaign		Facing page 38
The North Sea Mine Barrier, Principal Naval Actions and the German		
Naval Base		" 86
The War on the Sea		" 166

INTRODUCTION

BY REAR-ADMIRAL H. T. MAYO

THE United States Navy comes from its work in the World War proud of its accomplishments and with a right to stand before its owners, the American people, to ask for a "well done," even though it had no opportunity to take part in any great fleet engagements or to write its name large upon the tablets of maritime fame in the winning of any great naval battle.

"They also serve who only stand and wait"; and while the Navy did little "standing," its duty did require it to perform a great deal of watchful waiting and waiting watchfulness. The smallest harbor patrol boat, the least of the hundreds of submarine chasers, which traveled the smallest number of knots looking for the submarine which never came, is no less worthy the praise of those who feel that the Navy lived up to its glorious traditions, than are those destroyers which were fortunate enough to get into action and to write the final word to the career of some German U-boat.

Prior to our entry into the war, the United States Navy was anything but a well-rounded fighting machine, although the units in commission were in fine condition, and the personnel was of such character and caliber as to compare most favorably with that of any other sea power. Conditions, the cause of which need not here be entered into, had caused the Navy to grow more in one direction than in another. We had not enough destroyers, were ill-supplied with auxiliary vessels, were lacking in light cruisers (the great need of which was one of the most impressive lessons of the war), had no scouts, submarine chasers and harbor patrol vessels, and in aviation were far behind the other great powers who became our allies.

Yet in the short space of a year and a half, this fighting machine was made into a well-rounded combatant as well as a defensive arm, an expansion the story of which has never been entirely told—probably never can be adequately written.

From its very nature, a Navy never gets as much publicity as does an Army, nor is the public ever so well informed as to its accomplishments as it is of those of its land forces. Two regiments of Marines—a part of the Navy—which did such magnificent work in France, have received more publicity than the entire Navy, not only because what they did was spectacular, heroic, an object of admiration to the soldiers of other armies, but because what they did could easily be seen and estimated. The Navy functions far from the sight of the reporter, and even the largest Navy has but few units, compared to the multiplicity of units of the Army. So that only those accomplishments which are so epochal as to demand much newspaper space get chron-

icled to any extent, and the real wonder of our Naval performance—the sudden expansion of a Navy having a personnel of less than seventy thousand to one of over half a million, of a Navy having in commission about 300 vessels to one having in commission over 1,500 vessels, besides transports and cargo ships, in a year and half—is hardly noticed beside the triumphs of the land forces.

Our Naval expansion was much more than an intensive and extraordinary building program. We had to build destroyers and submarine chasers and submarines and build them quickly, and we did. But as much, if not more than that, we had to convert merchant vessels into auxiliary naval craft—transports, mine layers, hospital ships, tenders, patrol boats, etc.—and had also to make use of the many interned German vessels, some as auxiliary cruisers, others as transports.

Though not a finished machine, the Navy was not unprepared for war. We had been called on for real Naval service long before this country entered the conflict. The first call on the Naval forces was for armed guards for the merchant fleet—guns and gun crews—for freighters and passenger vessels. The call could come only to the Navy, for nowhere else could trained men be obtained. And this, which may seem a small matter, was but the entering wedge—it began to draft from the fleet the trained personnel which *is* the fleet, and that draft continued throughout the conflict. Not only were these men wanted for gun crews, but for a hundred other duties—men from the Navy were demanded on transports, on Shipping Board vessels, on freight carriers. Parallel to the Navy's sudden expansion, the United States maritime interests grew, mushroom-like, almost overnight. Europe had to have men, and had to have our food to feed them. . . . Europe expected an army of us, and got it, and expected us to feel that army, and we did. Europe expected us to provide for that army and we did provide, largely by ships which we built, and to no mean extent, by the services of crews drawn from the Navy.

Had those in authority in the Navy not been highly alert to the serious results of a draft of this kind, if not properly reinforced with new personnel, the efficiency of the fleet would have fallen greatly, regardless of the material accessions to its floating units. But almost before the ink was dry on the Declaration of War, the Navy was at work building up a vast organization by which to expand the training of new men. There is no thought on the part of any in authority that these hurriedly trained men turned out from training stations and ships in the minimum of time, were the equal in knowledge of their peace time prototypes. But they were most carefully selected, and the naval recruit made up in enthusiasm and earnestness what he lacked in time of training, and the work the Navy did is the best answer as to whether, if he was not wholly trained, he was sufficiently trained.

There is little popular knowledge of just what Naval training really is. The Navy has little use for the untrained man; nearly every member of every crew of every vessel must be a specialist in his own line. The Navy of the past had sailors and fighters; to-day machinery



U. S. Undersecretary and U. S. Navy.

Admiral Henry Thomas Mayo

He is the man who demanded an apology from the Mexican commander and the firing of a national salute to the United States flag, to make amends for the arrest of American sailors. As Commander of the Atlantic Fleet in the World War, Admiral Mayo's fame grew with that of the Navy, which won without even striking a blow.

does what hands did years ago, and brains and knowledge must be mobilized to make the machinery move the fighting ship and operate the weapons it carries. A fighting ship, be it the smallest submarine or greatest super-dreadnought, is a mass of complicated machinery; a thousand engines of one sort or another are crowded into the confines of the steel hull. The men must know these machines, know how they work, how they are to be kept in running order, how to repair them, how, if necessary, to do without them. So the Navy is a vast college of practical arts, and the raw material is made not only into sailors, but into pipe fitters, plumbers, electricians, stokers, machinists, painters, cooks, sail-makers, carpenters, musicians, gunners, turret men, radio-telegraphers, photographers, repairmen, coppersmiths—the list might be indefinitely extended.

At the same time that the floating units of the Navy increased in number and variety, the personnel grew even more, both because of the demand for men for those units and because of the drafts made on the Navy for men for merchant vessels and the rapid expansion of Naval operations ashore. The public sees a great battleship steam slowly out of harbor and cheers the inspiring sight, but knows nothing of the effort required to get it ready to go forth and fight. Supplies must be manufactured, purchased, stored, shipped. Ammunition must be provided; and ammunition means not only explosive but projectile, shell case and mechanism, accurate and intricate tests, storage and shipment. Instruments must be available; compasses, watches, chronometers, gun sights, range-finders, search lights, hand-glasses, telescopes, sextants, had all to be secured in quantity which far exceeded the capacity of existing manufacturing establishments to supply. Navy yards had to expand as the fleet expanded, and the repair shops not only repaired but manufactured. The mere matter of wireless required a great organization not only to supply the many delicate and expensive instruments, but to provide operators, and, be the course of training never so intensive and the man never so willing, it yet requires time to train the ear and the brain so that the faint buzz-buzz in the receiver comes intelligently and accurately to the ear.

Administration of this suddenly and greatly enlarged Naval machine had more than to keep pace with its growth. It had to anticipate the next expansion and be ready for it. The building of a great office building in Washington in record time was but a small detail in the whole vast operation, but it was as essential as any battleship or great rifle. The taking in and training of a fair sized army of civilian clerks was in itself no small achievement when the time involved is considered; and all the while that this was being done—ships being built, instruments made, ammunition provided, men trained—all this time the Navy was on the sea, at work at top speed and pressure and with results no less effective that they were not sung or storied like the battle of Jutland or the Zeebrugge attack, Great Britain's spectacular Naval achievements.

Our Naval operations were much more varied and extensive than

is generally known. The anti-submarine campaign was vigorously prosecuted. We had convoy and escort duty which was constant throughout the war. Our patrols were conducted not only on this side of the water but about the coasts of Great Britain and Ireland, along the waters of France and into the Mediterranean. We functioned in Northern Russian waters and we flew in the air almost from one end of Europe to the other. Our aviation program included the establishment of stations in Great Britain and Ireland, France and Italy; and if Naval achievements in the air were more static than dynamic, it must not be forgotten that no one knew when Germany would yield,



© Western Newspaper Union.

The War Council of the Navy Department

Secretary Daniels (seated); left to right: Maj. Gen. Bassett, U.S.M.C.; Capt. Watts; Assistant-Secretary Roosevelt; Rear Admiral McGowan; Rear Admiral Griffin; Rear Admiral Taylor; Admiral Benson; Rear Admiral Earle; Commander Sparrows; Rear Admiral Sparks; Rear Admiral Palmer.

and that it was essential to be ready for a war of an indefinite length. Before the armistice, we were ready in the air, and there can be no question but that that readiness, that display of sudden force above the water as well as on and under the water, was of both moral and material consequence to the enemy we were fighting.

It is obviously impossible in the short space here available to attempt even a résumé of American Naval accomplishments. I shall have done well if I can but indicate a few of our real achievements. But no such general remarks as these must be, could be, considered even approximately complete which omitted mention of the mining operations which were conducted in the North Sea.

The North Sea Mine Barrage was an American conception and very largely an operation of American execution. When it is realized

that we laid some sixty thousand mines, it will be understood that this was an accomplishment not only in conception, in manufacturing and in transportation, but in laying. It required not only the establishment of two great mine depots in Scotland where the mines were set up, but the provision and use of a dozen large, and many small, mine-laying vessels. The American Navy had already transformed two of its older cruisers, the *San Francisco* and the *Baltimore*, into mine-laying vessels, and the knowledge and experience thus gained was of such a character that when we came to make over other vessels into mine-layers, we were able to produce units of great efficiency, so that several of ours, of half the tonnage of Allied mine-layers, were able to lay double the number of mines in the same time, an accomplishment which met with most ungrudging and hearty applause from our Naval friends of Great Britain. It should never be forgotten that this and the majority of other United States Naval accomplishments were the fruits of long and arduous training of the Atlantic fleet. We did what we did because, no matter how the Navy lacked in certain essentials, the Navy was a prepared, up-to-date, and smoothly functioning fighting mechanism.

We had a mighty work to perform about our own coasts; harbors had to be guarded, coasts patrolled, submarines constantly hunted. Germany had shown us she could send submarines across the ocean and she did make at least one attempt to come over beneath the sea and damage coastal shipping. That she did no more damage than was done can only be laid to the vigilance of the coast patrol. The Panama Canal and the Caribbean Sea were matters of grave concern to the Navy. But the fact that we were not there molested during the war is sufficient proof that Germany regarded the risk as too great to run. Her information—no one doubts she had plenty of what we did and how we did it—made her sure that no force she could send could prove efficient against the defense the American Navy was prepared to interpose.

The American Navy put one battery of fourteen-inch guns on land in France to operate with the Army and at the time of the armistice a regiment of Marines was ready to go with twenty seven-inch guns. Mention has already been made of the two regiments of Marines, the Fifth and Sixth, whose glorious achievements and unquestioned service in historic Belleau Woods had so spectacular an effect in stopping the German threat at Paris. Marines are of the Navy, Naval, and it is a question not easy to settle, whether they or the Navy proper is proudest of the fact.

None are quicker to offer to the Navy the credit which is due it, than those in command of the Army. They know what part the Navy played in the transportation of more than two million men and their millions of tons of supplies and equipment, with a percentage of loss which is less than the percentage of death which the same number of men would suffer in the same time in normal civilian life. The Navy does not for a moment withhold full appreciation of the great part

played in this work by Great Britain's Navy, as well as the smaller parts taken by Italian and French vessels, in convoying our transports. But what the American Navy did was done effectively, splendidly, intelligently, swiftly; and, if one can believe our British friends, our coöperation with them in their own waters was highly appreciated and very effective.

The lessons of the war are very many, but, from a Naval standpoint, one stands out above all others, and it is to be hoped by all true friends of America that it will be neither lost nor forgotten in the blessings of peace. It is the lesson of preparedness. Glory though we may in what was done and the speed with which it was done, we cannot, should not forget that speed invariably means waste; that, spend as wisely as it could, the Navy must necessarily have wasted money in the hurried spending. What was needed was quick action, not economical action, and the two can never be had together: it is the winning, not the spending, which counts. Glory though we may in the undoubted efficiency of the Navy we had after we were well into the war, we cannot, must not forget that Germany's Navy was bottled up and kept from our shore for many months by fighting units flying another flag than ours. With the greatest coast line in the world, the greatest national wealth in the world, the United States of America needs must have, if not the greatest Navy, at least one adequate for any emergency. Had Great Britain and France been prepared as Germany was prepared, there would have been no war. Had we been prepared it is highly doubtful that Germany would have risked our participation unless, indeed, she wanted another and overwhelming opponent that she might take her defeat as soon and as gracefully as possible.

The war has cost us some thirty-one billions of money, of which twenty-three billions is national debt. The American people think the money well spent for victory. Half a billion a year is slightly more than two per cent. of this sum—less than the interest we will pay on our bonded debt. Is it too much to spend yearly to keep the Navy efficient, to keep its fighting units forming a harmonious whole, to develop it and round it out to complete unity of action as it is already complete in unity of purpose?

That is the question which every thinking American should ask himself, and that is the great lesson of the war, as far as the Navy is concerned. The Navy believes, as it hopes, that the American people are so well satisfied with their Navy, so proud of what it has done and so secure behind its defense of this our country, that they will give to it gladly what it needs to continue to be what it always wants to be—and what glorious tradition says it always has been—the first line of defense of the nation.

The War on the Sea

PART I. THE NAVAL STRATEGY AND MAJOR NAVAL OPERATIONS OF THE WORLD WAR

By CHARLES C. GILL
Commander, United States Navy

GRAND STRATEGY

The Part Played by Sea Power in the Defeat of Germany—The Transport of Troops From America the Turning Point in the War

I

THE OBJECT OF WAR

WAR is the continuation of policy by violent means, and strategy directs its conduct. Policy, broadly speaking, charts the destiny of a nation in the fulfilment of national aspirations, as seen and interpreted by those in governmental control. When national policies conflict, as they continually do and must, diplomacy, backed by potential power, attempts to negotiate a peaceful settlement; or arbitration may be resorted to, in the hope of arriving at a satisfactory compromise: but if these fail, and both sides take determined stand, war results, and each belligerent government strives by force of arms to sustain its avowed policy and to compel the enemy to submit to it. Clausewitz, eminent general in the field, scientist, and writer, was the first to point out clearly that real war is, in fact, an international relation; that it differs from the relation of peace in being hostile, instead of friendly;—"that war is a mere continuation of policy by other means."

It follows that wars are of various kinds according to the nature of the policies they are called upon to support. If the object is of great national importance, a matter of

self-preservation in which the peoples of the belligerent countries are deeply aroused, and if the two contestants are evenly matched nations or combinations of nations of the first rank, then each side will institute extreme military measures, the entire resources of the countries engaged will be laid under contribution,—in such a struggle entire nations are in arms and the course of the civilization of the world may be in the balance. In so far as the chief contestants were concerned, the World War is an example of this class.

On the other hand, if the matter under dispute is of minor importance, a question concerning a distant possession, a contention wherein the parties concerned are of unequal strength, or one in which the people at large are indifferent to the issue, then the object may not require or be worth any great military effort. In such a case, the point in policy under controversy will be conceded by one side or the other without extensive military operations. Wars of this class may prove of great importance in their ultimate influence on the history of the world, but they are decided without a wide disruption of society or far reaching derangement of the usual pursuits of peace. The Boer War in the Transvaal and the Spanish American War may be cited as familiar examples answering to this description.

Policy, therefore, controls the declaration of war, determines its nature and extent and is its master. The statesmen must instruct the strategists as to the political object of the war and the extent of effort the nation is willing to make to attain it, before the latter can draw plans for its prosecution. In illustration, it is at once seen how the war plans drawn by the strategists of Brazil to govern her participation in the recent war

toward the accomplishment of the political object of the war.

"When a chief of staff is asked for a war plan, he will ask what is the political object of the war, what are the political conditions, and how much does the question at issue mean respectively to us and to our adversary? It is these considerations which determine the nature of the war. He will then design and offer a war plan.

"Hence," says Clausewitz, 'the first, the greatest and most critical decision upon which the statesman and the general have to exercise their judgment is to determine the nature of the war, to be sure they do not mistake it for something, nor seek to make it something which from its inherent conditions it can never be.' 'This,' he declares, 'is the first and the most far-reaching of all strategical questions.' "

RELATION OF LAND STRATEGY AND SEA STRATEGY

It is obvious that geographical, political, economic, and military circumstances attending any particular war situation will determine the immediate objectives and indicate the respective rôles of the land and sea forces operating in combination to attain them. It is also obvious that these circumstances are subject to change. In the course of a long war there may be a succession of very different situations, each demanding a modification of war plans. During a war governments may be overturned, policies reversed, and strategy remodeled. Before taking up the special consideration of the maritime strategy which directed the major sea operations of the World War, therefore, it will be well, in order to keep a correct perspective, to review briefly the fundamentals of the grand strategy which controlled both land and sea operations at the beginning of the war and throughout its progress; the broad objectives for which each of the belligerents aimed; the relative functions of coöperation toward their attainment assigned their respective land and sea forces; and the more significant alterations made in the grand strategy of the respective belligerents, to meet new developments in the successive war situations.

* *Some Principles of Maritime Strategy*, by Julian S. Corbett.

IV—1



© Brown Bros.

Admiral Alfred von Tirpitz

Germany's Minister of Marine at the outbreak of the war.

were, for political reasons, limited in demanding expenditure of national effort, as compared to the war plans which governed the participation of France. Policy dictates grand strategy, which, in turn, determines the mutual relations and respective functions of its two branches, maritime strategy and land strategy. Maritime strategy deals particularly with activities related to the sea and land strategy is concerned mainly with activities ashore. The two however, are closely related, and it is a function of grand strategy to coöperate sea power and land power to make them pull together, as one team,



Punch, October 28, 1914.

The Limit

Scene: The coast of Belgium

The Kaiser: "What are the wild waves saying?"

Wild Waves: "We were just saying, 'Thus far, and no farther!'"

(The German invasion of England was seriously discussed as among the possible eventualities of the World War, once the German armies had established themselves in Belgium. Napoleon in his own day dreamed of landing an army across the Dover Straits, and so seriously did the British consider their danger that on the southern hills they built towers for observation, the ruins of which are pointed out to-day.)

THE ESSENCE OF MARITIME STRATEGY

The need for recognizing and appreciating the inter-action and inter-dependence of land and sea operations in order to form a clear conception of strategy in practice, is well expressed in the following passage quoted from Julian S. Corbett's discussion of this subject:—

"By maritime strategy we mean the principles which govern a war in which the sea is a substantial factor. Naval strategy is but that part of it which determines the movements of the fleet when maritime strategy has determined what part the fleet must play in relation to the action of the land forces; for it scarcely needs saying that it is almost impossible that a war can be decided by naval action alone. Unaided, naval pressure can only work by a process of exhaustion. Its effects must always be slow, and so galling both to our own commercial community and to neutrals, that the tendency is always to accept terms of peace that are far from conclusive. For a firm decision a quicker and more drastic form of pressure is required. Since men live upon the land and not upon the sea, great issues between nations at war have always been decided—except in the rarest cases—either by what your Army can do against your enemy's territory and nation life, or else by the fear of what the Fleet makes it possible for your Army to do. The paramount concern, then, of maritime strategy is to determine the mutual relations of your Army and Navy in a plan of war. When this is done, and not till then, naval strategy can begin to work out the manner in which the fleet can best discharge the function assigned to it."

In the above quotation it is to be noted that maritime strategy is spoken of as the grand strategy of a maritime nation. It is true that for an Island Kingdom maritime strategy ordinarily dominates grand strategy and land strategy is ancillary, but notwithstanding this, in order to keep the same terminology in discussing the strategy of both maritime and continental countries, it is advisable to use consistently the designations previously explained. In all wars policy dictates grand strategy, which in turn directs and coördinates its branches, maritime strategy and land strategy. Circumstances will determine which of the latter will dominate in any particular war situation. With this understand-

ing of the meaning and relation of these terms, we can now turn to a brief survey of their application to the World War.

II

THE STRATEGY OF GERMANY

AT the outbreak of the war, the policy of Germany was—and openly had been for many years previous—Teutonic aggrandizement; a policy of economic and territorial imperialism aspiring to a world empire secured by physical force on the principle of the survival of the fittest; a universal and continuous competitive struggle wherein "might" was considered "right" and the end was looked upon as justifying any means. The German Government had skillfully built up a powerful machine to further this policy both in peace and in war. Preparation in all departments, military, naval, educational, and industrial, had been pushed to the utmost. It was this policy of expansion that dictated the grand strategy of the German General Staff which prepared, and in 1914 put into operation, the Imperial war plan.

By this war plan German strategists aimed: first, before the Russian Armies could mobilize, to crush France by a sudden advance through Belgium and Luxembourg; second, France having been conquered, to turn quickly to the Eastern front and destroy the military power of Russia; and third, to realize the imperial ambition of German domination of *Mittel Europa*, to open the way for the victorious Teutonic Armies eventually to subjugate Africa and Asia and finally to dominate the world. The original German war plan assigned to land strategy a positive offensive rôle, and to maritime strategy a supporting, generally defensive rôle.

OFFENSIVES AND DEFENSIVES

The terms "offensive" and "defensive" are used frequently in the discussion of war operations, and, inasmuch as wrong and confused thinking will result unless a clear idea of their exact meaning is had at the outset, it will be attempted to define and explain them before going further.

The political object of a war may be to defend a policy or to defend territory, but this does not necessarily mean that the strategy best designed to attain this defensive political object should assign purely defensive rôles to the land and sea forces. On the contrary, it is axiomatic that counter-attack is the soul of defense, and, if positive results are to be obtained, offensive action must be employed. All experience teaches that a passive defense is to invite ultimate defeat. Whether the political object of the war is defense or aggression, at certain times, and in certain places, sound strategy will direct some of the forces of a belligerent to assume the offensive, and in order to make these offensives effective, the same strategy will also direct other forces at other points to act on the defensive. With an extended land and sea front it is impracticable to maintain all along it a continuous offensive. It would be poor strategy to try to do so. Offensive and defensive operations are complementary in the conduct of war, and it is one of the principal functions of strategy to determine when and where to attack and how to support the attack by defense. Under certain conditions, usually in the case of inferior strength, there may be advantage in assuming the defensive. The offensive is exhausting to both men and material and can be overdone. Proper protection and opportunity to recuperate are essential to the full development of the energy both of weapons and men. To attack under unfavorable conditions might be to court disaster. In such circumstances a judicious defensive may cause the enemy to weaken himself by futile attack, until, at a propitious moment, a successful counter-attack may be made and an offensive movement begun. At the same time, it must be kept in mind that it is only by a successful offensive that a positive decision can be reached. The proper method of defensive operations is to maintain an alert and aggressive attitude, ready to seize the advantage of counter-attack upon a weakened or unexpecting enemy. A passive defensive if persisted in is damaging to morale and destructive of military effort. Therefore, in stating that the grand strategy of Germany, at the opening of hostilities, assigned a generally defensive rôle to German sea power, it is not intended to convey the impression

that the maritime forces of the enemy were kept passive and inactive. On the contrary, the conduct of the enemy fleets during the first two years of the war indicates that the German naval forces conducted a defensive along the maritime fronts according to sound military concepts. Morale was kept up by alert readiness to fight, and by frequent excursions which resulted in occasional clashes with the enemy. On the other hand, during the last period of the war, there is evidence that this aggressive defensive of the main battle fleets was allowed to lapse, and gradually turn into a passive defensive with consequent deterioration of morale, the harbinger of the internment of the High Seas Fleet.*

It is not the purpose of this discussion, nor does space permit going into the details of either the policies which dictated the grand strategy of the war, or of the grand strategy itself. Nothing more will be attempted here than to give briefly a general idea of their trend, so that when the maritime strategy and the major naval operations are discussed at greater length, the points made by sea power may be viewed in correct proportion and assigned proper relative weights, in conjunction with other factors. The maritime strategy of the World War, in itself, is a very large subject, one which, in all probability, will not be treated with any degree of completeness for many years. It is necessary, however, to break ground, and the finished work must be preceded by rough sketches. Such, and nothing more, is a study like this, written so near the event. For its purpose, brief introductory outlines of policy

* Since an erroneous impression has been spread by a wide misuse of the word "surrender" in speaking of what was in fact the formal internment of the German ships, special attention is called to article XXIII of the armistice which reads as follows:

"XXIII. The following German surface warships, which shall be designated by the Allies and the United States of America, shall forthwith be disarmed and thereafter interned in neutral ports, or for the want of them, in allied ports, to be designated by the Allies and the United States of America, and placed under the surveillance of the Allies and the United States of America, only caretakers being left on board, namely: Six battle cruisers, ten battleships, eight light cruisers, including two mine layers, fifty destroyers of the most modern type. All other surface warships (including river craft), are to be concentrated in German naval bases to be designated by the Allies and the United States of America, and are to be paid off and completely disarmed and placed under the supervision of the Allies and the United States of America. All vessels of the auxiliary fleet, trawlers, motor vessels, etc., are to be disarmed."

The status of ships interned is quite different from surrendered ships and this is of interest in view of the sinking which later took place at Scapa Flow.

and grand strategy suffice. Without examining more closely the Teutonic war plan at the opening of the war, a general survey will now be made of the opposing war plan resulting from Allied policy and grand strategy of that time.

III

THE STRATEGY OF THE ALLIES

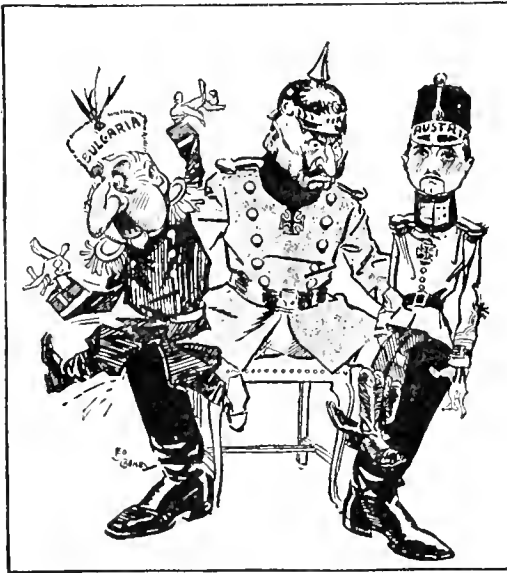
THE broad general policy of the Allied cause may be described as one of defense against the aggressive policy of the enemy. The Allies labored under the disadvantage of being less unified than their enemy both geographically and politically. The policies of the individual nations in arms against Germany had points of variance. They were not in perfect agreement as to the development of their respective national aspirations. Discords were suppressed, however, in the imperative need for combination against the German menace. The military writers, philosophers, statesmen, and soldiers of Germany had announced, in no uncertain terms, her policy of expansion and domination. The policy combining Great Britain, France and Russia, and the other countries

later associated with them in resistance to Teutonic ambition, was grounded in the broad principle of self-preservation. The grand strategy of the Allies aimed to remove this menace of Pan-Germanic autocracy.

Although France, Russia and Great Britain lacked unity of control centered in one chief command and staff, they coöperated under a more or less definite war plan. In the first stages of the war, due to the better preparation of the German Army, the general character of Allied land strategy was defensive. At sea, on the other hand, conditions were reversed, and the superiority of the Allied Fleets over those of the enemy made Allied maritime strategy, in the main, offensive. This does not mean, however, that there were no offensive operations conducted by the Allies on shore, or that the Allied Fleets never resorted to defensive measures. As has already been pointed out, offensive and defensive operations are complementary. Each war situation has its special combination of the two. The grand strategy of the Allies at the opening of hostilities assigned to the land forces the mission to check the superior enemy armies, while it was the function of the superior Allied Fleets to control the seas, to destroy enemy power abroad, to limit his activities at home, to deny the use of the sea to the enemy and to secure the benefits of ocean communication to the Allies.

What were the successes and failures of these respective war plans of the belligerents engaged?

The continental designs of the German Army were recognized and the Allies made desperate efforts to defeat them. All available forces were gathered to stem the enemy's advance against France. To relieve the pressure in the West, Russia hastened her mobilization and in an unexpectedly short time invaded East Prussia, German Poland, and Galicia. This diversion in the East, combined with the delay caused by the unlooked for strong resistance of Belgium, upset the German plan for the quick overthrow of France, and the fighting on the Western front developed, for the time being, into an indecisive deadlock. Later, Italy entered the war and reinforced the line on the right of France. The German Armies had made important gains in France but had failed to accomplish



Passing Show, London.

The Potsdam Puppets

"Hang it all, I don't believe this new one is going to work."

their mission. Consequently, the war was to be a long war instead of a short war. This brought sea power into the field as a predominant factor.

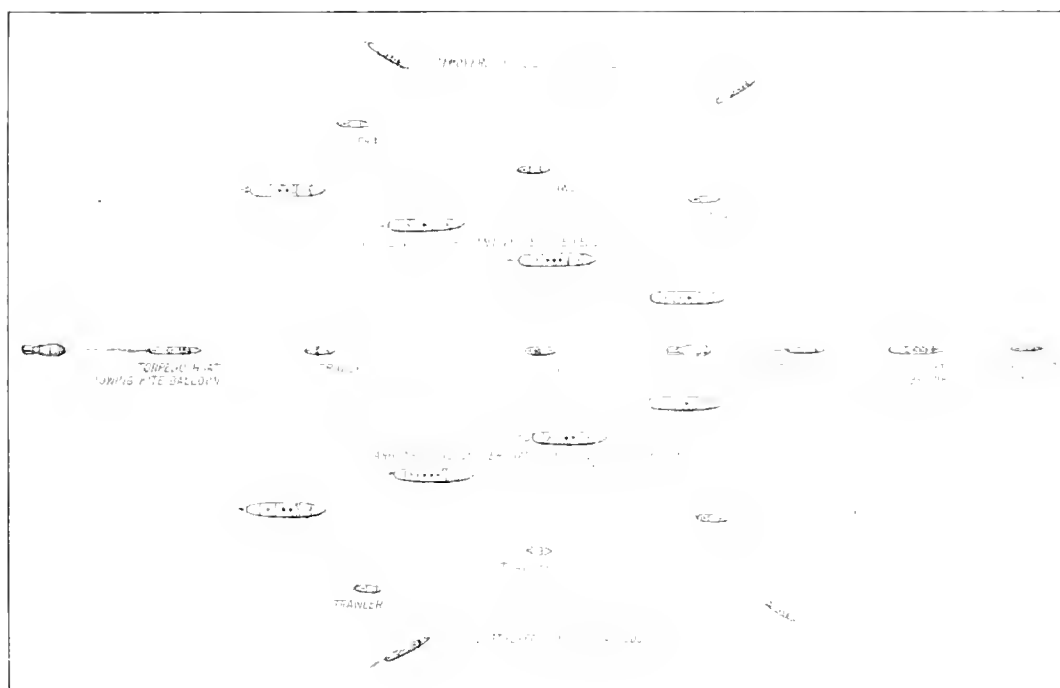
IV

GERMANY'S CHECK ON LAND

EVIDENCE is not wanting that German strategists were well aware that in all great wars between commercial nations sea power exerts a potent influence. But the German General Staff counted upon Germany's geographical position and her superior military preparedness to offset her inferiority in naval strength. The central European position of the Teutonic Allies, and the contiguity of Europe, Africa and Asia, constituted important points of vantage for land strategy. The enemy hoped by a quick series of successful continental campaigns to win the objects of the war and compel a favorable

peace before the more slowly operating pressure of sea power could do effective damage.

This plan failed, and the German War Staff were compelled to revise their grand strategy. As the war dragged on, and Germany began to suffer from the blockade, it was realized that, in order to win the war, something would have to be done to counteract the benefits the Allies were deriving from British control of the seas. The defensive rôle, hitherto maintained by the German Navy, would no longer suffice. For the Imperial War Staff the situation was difficult. The only naval weapon Germany could use was the submarine; and underwater craft had limitations and weaknesses which made them ineffective as commerce destroyers while operating in compliance with the *dicta* of international law. To disregard the law was to irritate neutrals and possibly increase the number of Germany's enemies. Finally, the High Command decided to sacrifice law and humanitarian considerations to military ne-



© Scientific American.

The Convoy System

By an elaborate convoy system the depredations of German submarines were soon reduced to a negligible proportion of the total shipping. The method employed toward the end of the war is here depicted, and it will be noted that it calls for destroyers, light cruisers, trawlers, and kite balloons.

cessity, and German sea power was directed to enter upon its unscrupulous submarine campaign against commerce. The objective was to interrupt the Allied sea communications and by the destruction of trade and shipping to weaken the resisting power of the Western armies to such an extent as to make decisive victory possible, or, at the least, to influence England and France to negotiate a peace favorable to Germany.

In the meanwhile, Germany had realized her aims in the East. Turkey and Bulgaria had made common cause with the dual Teutonic Alliance. German sea power, by its command of the entrances to the Baltic and Black Seas, had cut off Russia, Rumania and Serbia from Allied support. By a series of successful campaigns the Teutonic Armies had destroyed the military power of Russia and had gained control of *Mittel Europa*. It is thus seen that, by the end of 1916, the German war plan had succeeded in the East but had been checked in the West.

At this time, though the Allied Armies had been defeated in the East and driven back in the West, still, they had prevented the conquest of France. At sea important advantages had been gained but these did not include any noteworthy positive success. The attempt to open communications to Russia by an offensive against the Dardanelles had failed. The main fleet of the enemy was still a fleet in being, controlling the Baltic, defending the German coasts, and constituting a continual menace. The submarine campaign against trade and shipping had not been defeated. On the other hand, Allied sea power had been successful in destroying enemy fleets abroad, in capturing enemy colonies, in sweeping the German flag from the high seas, in effecting a distant blockade of enemy ports, in containing the enemy battle fleet, and in securing the benefits of open communications by sea to all continents, except for the partial interference of enemy U-boats and occasional surface commerce destroyers. These accomplishments served to offset, to a certain extent, the triumph of German arms in Belgium, Northern France, Russia, Rumania, and Serbia; but even so, at the end of 1916 the tangible gains of Germany seemed to tip the scales strongly in her favor.

At this time, Germany would, no doubt,

have been well pleased to effect a peace by negotiations which might enable her to consolidate her winnings in Russia and *Mittel Europa*. But the Allies were not defeated and the war entered upon its last stage. In this stage, though the final victory was on land, it was sea power that shaped the issue.

V

THE SUBMARINE AS A NAVAL WEAPON

AS has been pointed out, the German Armies had been successful to a certain degree, but had failed to force a decision. In order to obtain a victorious peace Germany turned to her Navy for assistance. This change in the grand strategy of Germany, by which the submarine was assigned a major offensive mission, and the armies temporarily put on the defensive, was announced by Hindenburg, in the spring of 1917, when he said that it was only necessary for the German Armies to hold their own on land until the enemy armies became weakened from the effects of the U-boat campaign against their sea communications—then a resumption of the offensive on land would result in decisive victory. It was a significant recognition of the potency of sea power that Germany's first soldier should thus have made the point that the submarine, the only naval weapon able to evade the Allied blockade, promised a respite and a hope that the German Armies, unassisted, could not give, even though the latter had made large gains on all fronts and had conquered entire countries.

It is doubtful if, even now, many people realize how critical the Allied situation was in those days, or how near this revised war plan of the German General Staff came to attaining its object. It is true that unscrupulous submarine warfare against commerce caused the United States to enter the war and this in turn made possible Allied victory; but it is also true that authoritative opinion on both sides did not regard this latter event as a foregone conclusion. In the glamour of our overwhelming victory there is a tendency, in present day discussion, to under-rate the product of the deliberations of the expert



Bernard Partridge.

Fig. 4, February 17, 1915.

"Sound and Fury"

Kaiser: "Is all my High Seas fleet safely locked up?"

Admiral von Tirpitz: "Practically all, Sire."

Kaiser: "Then let the starvation of England begin!"

German General Staff which directed national policy as well as military effort. To be sure they made mistakes. They made the one big mistake that counts, they lost the war. But, notwithstanding, neither the policy nor the strategy of the enemy, at the time in question, can be fairly condemned as foolhardy. On the contrary, it would appear that the decisions of Germany were reasoned from at least plausible premises. Nor does this admission reflect less credit upon the policy and strategy that finally won the war.

It cannot be assumed that the Zimmermann note was an entirely detached and haphazard piece of diplomacy. Had this scheme materialized in the early months of 1917, what then would have happened? This speculation should give pause to those who do not believe in a national insurance policy of naval and military preparedness. The timely exposure of this outrageous plan was one of the most dramatic incidents of the war and was of strategic importance, because it was the spur needed to urge the American people to a great military effort.*

No doubt Germany anticipated that her unrestricted submarine offensive would cause the United States to enter the war. This did not, however, act as a deterrent. Germany was confident in the efficiency of her U-boats and expected them to prevent the United States from taking an effective part. The enemy counted upon our unpreparedness and did not think it possible for this country to transport and supply overseas a large army. And indeed, a measured view of the military situation in the spring of 1917, shows that Germany had good grounds for these opinions, and that the Allied cause was in serious danger.

VI

A CRITICAL SITUATION IN 1917

THE general offensive planned by the Allies for the spring of 1917 failed, and failed disastrously. Russia was in collapse, and the German General Staff was already counting the troops available from the Eastern front, for the contemplated spring campaign of 1918 against the Western armies.

* For the Zimmermann note, see Volume I.

The French Army was becoming demoralized, and the defeat suffered by the Allies on April 16, 1917, was the spark needed to set off the train of discontent, sedition and mutiny, which the intelligence sections of the German Government had been carefully preparing for so many years. It was part of the German propaganda to make the French soldiers believe that they had been betrayed by their government, and also that no military help was possible from the United States. The subsequent record of courts-martial, military executions, and government investigations, shows to what extent disaffection had spread throughout France. It is significant that M. Malvy, Minister of the Interior, then charged with safeguarding France from the machinations of enemy secret agents, has since been tried, convicted, and banished for criminal neglect, and that the then Head of the Secret Police, together with the Assistant to the Prefect of Police in Paris, were later convicted and sentenced to jail for intercourse with the enemy during this period. Coupled with these conditions on land was a no less serious situation at sea. The objective of Allied naval power was to control the sea, deny its use to the enemy and monopolize its privileges for Allied shipping. In the spring of 1917 the Allied Fleets were far from attaining this objective. Enemy naval power was effectively contesting control of the sea. Allied shipping was being destroyed at the alarming rate of 800,000 tons a month. So successful had the German U-boats been in the destruction of merchant shipping that weakening effects were being felt by the Allied Armies on the West front, and the possibilities of a vigorous German offensive were viewed with great anxiety.

It was this critical situation which stirred the United States Government to take definite military action. A council of war was held, and the decision made to land an expedition of United States troops in France as soon as practicable, and to make this the forerunner of a great army. The United States had always viewed the transportation overseas of a large army as a remote, if not impossible, contingency. Consequently, the military and naval establishments had drawn no plans and made no preparations for such an enterprise. Exactly how large this European Army would



Photo by Hunter.

The American Fleet in British Waters

Rear-Admiral Hugh Rodman, who commanded the American Fleet that operated with the British Grand Fleet, is welcoming King George aboard the battleship *New York*. The King is followed by Admiral Sir David Beatty.

ultimately be, or how rapidly it could be raised and transported depended upon conditions and circumstances which could not accurately be foreseen. But a start was immediately made and the first expedition of about 12,000 men sailed on June 14, 1917.

VII

SENDING TROOPS FROM AMERICA

WHEN superficially viewed in the light of what happened after the event, there appears to be nothing unusual in this decision to send our Army abroad. To the

casual observer it now looks like an obvious conclusion, so simple as to be almost commonplace. Yet such in reality was not the case. Instructed military minds appreciate that the considerations involved were large and perplexing. Allied strategists were divided in opinion as to exactly what course to take. How, when, and where, should effort be concentrated to save the Allied cause? Many were against attempting a large troop movement because they claimed that shipping resources were already strained to the utmost without the additional burden of transporting and maintaining an army from the United States. There is little risk of hyperbole in venturing the opinion that history will mark

this raising, training, equipping, and transporting overseas of our army as one of the most momentous achievements in the annals of military operations.

On this point the German Staff argued that in the face of their submarine campaign, and the consequent shortage of shipping which was already causing embarrassment to England and France, the United States would never venture the overseas transportation and supply of an effective army; and if they did venture this hazardous undertaking the U-boats would see to it that disaster should attend and make impossible its accomplishment. Few informed critics will venture to attack this opinion as altogether illogical. On the contrary, the experience of previous wars seems rather to support the point of view that the interest of the United States in the war did not constitute a sufficiently impelling motive to induce the government to make a decision involving a great risk. The decision was made, however, and marked the turning point of the war. Ultimate victory or defeat hinged upon whether or not this decision—the overseas transportation and supply of an effective army—could be successfully carried out.

The Allied grand strategy for the last phase of the war, therefore, was to defeat the submarine offensive, increase the pressure of the blockade, and by the use of sea power

along the ocean lanes of communication to vitalize the Western Army with men and supplies from the United States, then, with superior forces to attack and destroy the armies of the enemy or compel them to surrender through fear of destruction. The Allies thus planned to check the aggressive ambitions of Germany, and to reconquer Russia, Rumania, and Serbia in the East by the decisive defeat of enemy armies in the West. So did Napoleon expect to conquer Pondicherry on the banks of the Vistula.

Germany made desperate efforts with her submarines to cut the Allied sea communications. In this she first attained considerable success but in the end failed. The enemy tried by a determined offensive in the spring and summer of 1918 to gain a decision before an effective United States Army could be put in the field. This also failed. By the fall of 1918, 2,000,000 American soldiers were in France, the German Armies had been defeated, were in full retreat, and only saved from annihilation by surrender.

With this brief preliminary survey of the grand strategy of the war, and keeping in mind the inter-action of its two branches, land strategy and maritime strategy, we shall next turn to the more particular consideration of the latter and the major naval operations conducted under its direction. Each theater of sea activities will be considered separately.

IN MEDITERRANEAN WATERS

Comparison of Forces and Estimate of the Naval Situation at the Beginning of the War

FROM the pre-war-time disposition of naval forces it is evident that the understanding between France and England in regard to naval operations in the middle sea assigned to the former the paramount duty of accounting for the enemy in the event of hostilities between the Triple Entente—Great Britain, France and Russia—on the one hand, and the Triple Alliance—Germany, Austria and Italy—on the other. Great Britain and Russia would be expected to furnish such as-

sistance as circumstances might permit, but the responsibility for the control of the Mediterranean apparently rested on the shoulders of the French Chief Command.

At the beginning of the war, Admiral Lapeyriere was Commander-in-Chief of the French Fleet, and it is to be remembered that in the critical first days of August his problem was complicated by the fact that the attitude of Italy was uncertain. Immediately after the declaration of war between France and Ger-

many on August 3, 1914, however, Italy declared her neutrality and this created a naval situation in the Mediterranean which gave the Allies an overwhelming superiority in ships and guns.

The French Fleet available for Mediterranean service consisted of four dreadnought battleships, twenty predreadnought battleships, twenty-two armored cruisers, nine light cruisers, eighty-four destroyers and sixty-four submarines. An approximate comparison of this fleet with the Austrian naval forces shows that the French Navy was

2½	times that of Austria in battleships.
8¾	" " " " armored cruisers.
3	" " " " protected cruisers.
2½	" " " " destroyers.
3½	" " " " torpedo boats.
12	" " " " submarines.

In addition to the Austrian Fleet, a German squadron under command of Admiral Souchon, consisting of the battle cruiser *Goeben* and light cruiser *Breslau*, was cruising in the Mediterranean at this time. But, to more than counterbalance this, in reinforcement of the French Fleet, England had a squadron in these waters under the command of Admiral Milne, seconded by Admiral Troubridge, consisting of three battle cruisers, two armored cruisers, three light cruisers, and a flotilla of destroyers. The particular mission of this British squadron seems to have been to capture or destroy the two German cruisers, but whether this was explicitly the case or not, it would hardly relieve the French Commander-in-Chief of his full share of responsibility for their subsequent escape.

AN AGGRESSIVE PLAN LACKING

Under the circumstances it would appear reasonable to have expected the superior Allied Fleets to conduct a vigorous offensive. A complete report is not available of just what occurred in the Mediterranean and for that reason comment should be offered with reservation, but it is certain that no positive results were obtained, and French and English naval forces, either by inaction or by misdirected action, failed to take advantage of an opportunity for performing services which might have had far-reaching effects upon the course of the war.

In the first place, it is not clear why more

aggressive demonstrations were not made in the Adriatic against Austria by the Allied fleet. To be sure, the Austrian fleet was contained in this small sea while the Allies had free use of the Mediterranean, except for submarine depredations. But this could have been accomplished with less than half of the Allied naval force actually employed. A few excursions are reported to have been made in the Adriatic, but they had no important results and the enemy seems to have enjoyed almost unrestricted freedom in this sea to the southward as far as Cattaro. Montenegro and Serbia were Allies, and Italy was disposed to be friendly. Under these circumstances a more aggressive strategy on the part of Allied naval power might have had beneficial consequences, especially in its influence upon wavering neutrals. It has been argued, moreover, that Cattaro offered an objective of considerable promise for a combined land and sea attack. An attack was planned, but not being adequately supported either by land or by sea, it failed. Finally, the conquest of Montenegro and Serbia gave the enemy control of the eastern coast of the Adriatic. On this question of whether or not the Allies should have conducted a naval offensive in the Adriatic, however, there are two sides. Expert opinion was, and still is, divided as to the advisability of risking ships by advancing against an enemy fleet on the defensive, protected by mines and torpedoes. The circumstances and conditions peculiar to the special naval situation will determine the decision. More light is required before drawing definite conclusions respecting the conduct of the Adriatic naval campaign.

In the second place, and in this there is little difference of opinion, it is hard to understand how the *Goeben* and *Breslau* could have escaped if a proper disposition of the French and British ships had been promptly made. The Allies had in the Mediterranean at this time numerous men-of-war possessing both speed and power, including three British battle cruisers, several fast light cruisers, and many destroyers. Although the German force was a small one, and while at first glance its escape does not appear as a matter of very great consequence, in reality this episode had far-reaching political consequences, and points an important naval lesson.

GOEBEN AND BRESLAU ESCAPE

Just How the German Cruisers in the Mediterranean Got Away from the British Explained from German Sources

SUMMARY FROM AN ACCOUNT PUBLISHED IN GERMANY BY DR. EMILE LÜDEWIG

IN the latter part of July, 1914, the *Goeben* and the *Breslau* were in the Adriatic. The *Goeben*, under the command of Admiral Souchon, completed repairs at Pola on July 30th, and was then ready to go to sea.

The Admiral decided, on account of the strained relations following the assassination of the Archduke of Austria, to move toward the Straits of Gibraltar and be in readiness to dash into the Atlantic on short notice if war became imminent and the German Government so ordered.

On August 1st the *Goeben* was joined by the *Breslau* at Brindisi. On August 2nd, the two ships sailed for Messina and coaled there. During the night of August 2nd the squadron sailed to the westward.

On August 3rd, Admiral Souchon was informed by radio of the declaration of war between Germany and France, and also received instructions to go to Constantinople.

Being at this time in the neighborhood of the Algerian coast, he decided to bombard Bona and Phillippeville before proceeding to the east, hoping by this maneuver to confuse the enemy as to his real intentions. The *Goeben* bombarded Phillippeville at 4.40 a. m., August 4th, while the *Breslau* conducted a simultaneous bombardment of Bona.

The two ships then rendezvoused at sea, heading to the north and west. At about fifty miles from Bona they sighted an English squadron, which followed them during the day, but was out-distanced in the evening. The speed of the German ships was 28 knots. After steering various courses to deceive the enemy as to their true destination, they headed for Sicily, and anchored at Messina at 5.00 p. m. on August 5th. Coal was obtained there with difficulty, as Italy refused to accede to their demand for replenishment.

In the afternoon of August 6th, an Italian officer, in the name of his government, invited

them to leave the port of Messina. Admiral Souchon thereupon requisitioned the German liner *General*, which he found in this port, and directed her to leave port a short distance behind the two cruisers, and to follow them in the direction of Constantinople. On the same day the German admiral learned of the declaration of war between Germany and England, and was also informed that the entrances to Messina were guarded by English warships. At 5.00 p. m., the *Goeben* and *Breslau* sailed from Messina.

They were trailed by the English cruiser *Gloucester* at a distance of 20,000 meters. The German admiral did not open fire upon the *Gloucester*, nor did he interfere with the wireless messages she was sending to other cruisers.

At 10 o'clock that night, however, the weather having become overcast, Admiral Souchon ordered a radical change of course, and instead of continuing toward the Adriatic, he headed for Matapan. At the same time he ordered the radio of the *Goeben* to jam the signals of the *Gloucester*. The *Gloucester* lost contact during the night, but regained it the next morning, August 7th, at 5.00 a. m., and engaged the *Breslau* until threatened by the *Goeben*, when she withdrew.

On the 7th of August, Admiral Souchon received from Berlin a message informing him that entry to the Dardanelles at that time was not possible. The two German cruisers then proceeded to the Isle of Denusa, where the liner *General* was directed to join them. The latter was first sent to Smyrna to ascertain the attitude of the Turks toward the German squadron.

On August 8th and 9th, the two cruisers found a collier and coaled at Denusa without molestation. Then, on the afternoon of the 9th, having received a message from Berlin informing them that the Turkish authorities were agreeably disposed, the German squadron proceeded to the Dardanelles. They anchored inside the Straits at Chanak, and a few hours

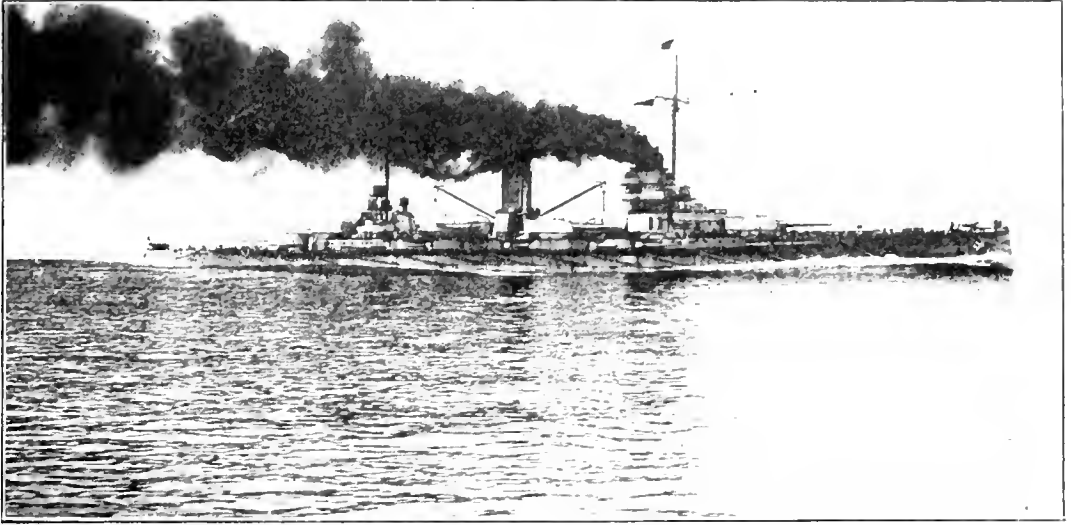
later English cruisers arrived outside the entrance.*

An explanation of the escape of these two ships from the Allied naval forces has not yet been given, but it would appear that either there was a proper plan lacking, or, if there was a proper plan, somebody blundered badly in putting it into execution. It must be that the French Commander-in-Chief was kept informed of the movements of the *Goeben* and *Breslau* from port to port. Certainly

dispositions could have been made by which they would have been compelled to engage superior forces. Finally what were the Allied ships doing between August 6th and August 9th?

THE LOG OF THE *GOEBEN*

International law required that the German warships leave the neutral port of Messina within twenty-four hours. The chances for escape appeared dubious to say the least, and the following version of the maneuver,



© Underwood and Underwood.

The Former German Cruiser *Goeben*

With her sister ship the *Breslau*, she escaped from the British Fleet in the Mediterranean, both ships making their way to Constantinople.

they disclosed their position by bombarding Bona and Phillippeville. It would be interesting to know what steps were taken. To block the Straits of Gibraltar would have been a simple matter. It is assumed that at least a large part of the French Fleet was either at or close to Bizerta. With the forces available it would appear by no means difficult to bar effectively the passage between Sicily and Cape Bon. That the German admiral might head for Messina must have been foreseen. Later, when the ships were known to be in Messina, it would seem that

purporting to be based on the log of the *Goeben*, is of interest:

On Aug. 6, 1914, just before sailing from Messina the German commander issued these orders: "News about the enemy is uncertain. I presume his strength lies in the Adriatic and that he is watching both exits to the Messina Strait. Our object is to break through to the east and reach the Dardanelles. I want to create the impression that we intend to go to the Adriatic. In case I so succeed I will veer round in the night and make for Cape Matapan, if possible throwing the enemy off our track."

As the ships—flags flying and music playing—were reaching the open sea the following wireless message from the Kaiser reached the admiral: "His Majesty expects the *Goeben* and the *Breslau* to succeed in breaking through."

* It was rumored that while off the northern coast of Africa the two German cruisers, when hard beset by enemy forces, escaped during misty weather by the aid of a ruse—that of placing some muscans on a raft to attract the attention of enemy patrols by playing German airs, while the warships laid their course for Messina.

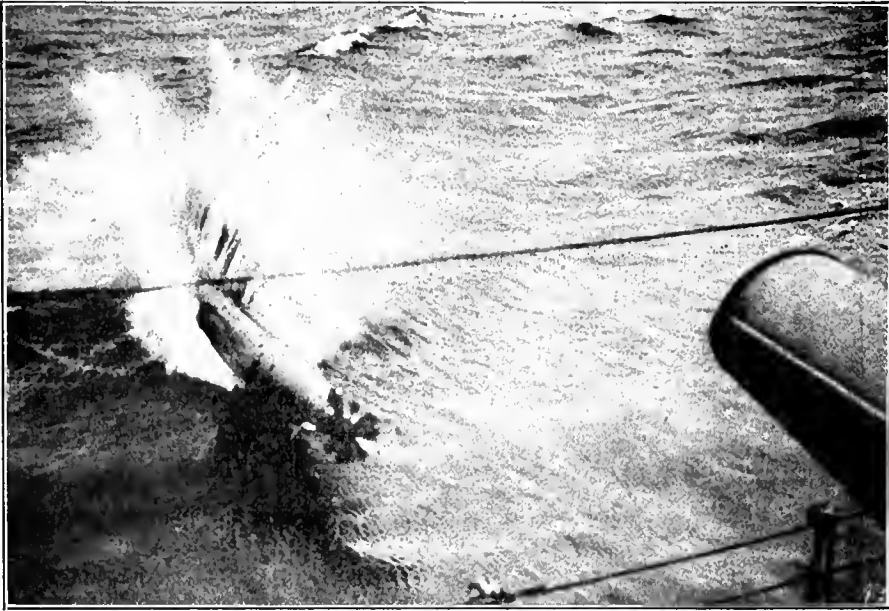
Shortly after leaving the harbor the English cruiser *Gloucester* appeared on the horizon. The English cruiser was emitting signals in three groups. The word "Mumfu" frequently occurred and it was clear that it referred to the *Goeben*. The wireless receivers interpreted the signal of the British cruiser as follows: "*Goeben* making for the Adriatic."

The German wireless officer argued thus: "I can jam him. If I break my waves against his perhaps I can confuse, hold up, destroy his messages. Shall I jam his wireless?" he asked the admiral.

"Shall we fire?" asked the commander.

lowing order flashed out from the admiral: "Jam the wireless; jam it like the devil."

For hours the Germans were traveling eastward without obstacle, while the patrol boat tried to make itself understood in vain. Where did the error of our enemy lie? In England the excuse was advanced that the Germans had acquired knowledge of the British secret wireless code and so deceived the latter into waiting. Is it worth while contradicting such stuff? The English should have waited before the Strait of Messina, and nowhere else. But so confident were they that the *Goeben* and *Breslau* must try and break through to the Adriatic



A Torpedo Taking the Water

"No," was the answer to both questions. No one apart from the staff understood the admiral. This is how he argued, however: "This boat is evidently a patrol, intending to wireless our movements to the main British fleet. He shall save us, not ruin us. He shall do his work. We will neither fire at nor jam him. Let him wireless that the Germans are making for the Adriatic, whereas the Dardanelles is our object."

It was dark. The *Breslau* closed in. It was 10 o'clock in the evening; then came the order from the bridge: "Starboard; make for Cape Matapan."

The watching British cruiser saw the maneuver, but before she could wireless the news that the Germans were making for the east the fol-

lowing order flashed out from the admiral: "Jam the wireless; jam it like the devil." For hours the Germans were traveling eastward without obstacle, while the patrol boat tried to make itself understood in vain. Where did the error of our enemy lie? In England the excuse was advanced that the Germans had acquired knowledge of the British secret wireless code and so deceived the latter into waiting. Is it worth while contradicting such stuff? The English should have waited before the Strait of Messina, and nowhere else. But so confident were they that the *Goeben* and *Breslau* must try and break through to the Adriatic

in order to reach an Austrian port, that they thought it safe to wait in the Strait of Otranto, which is forty sea miles wide. So positive were they on this point that the thought of our making for the Dardanelles never seems to have occurred to them.

When the wireless messages of the *Gloucester* finally reached the British fleet it was too late. The German ships were *en route* for Constantinople.

BOTH CRUISERS SOLD TO TURKEY

That this episode caused the Allies considerable chagrin may well be imagined. A little later, apparently as an alternative to disarming and being interned, the *Goeben* and

Breslau were sold by Germany to Turkey, a transaction without precedent and involving a question of international law. Sharp representations were made by the Allies to Turkey, claiming that the latter had violated her neutrality and demanding immediate repatriation of the officers and crews. Turkey failed to comply with this demand and it is reasonable to suppose that the presence of the two warships in Constantinople had considerable influence in persuading the Turkish Government to join Germany and Austria in the war.

At this initial period in near-eastern affairs, determined action on the part of the Allies toward Turkey might possibly have had important effects.

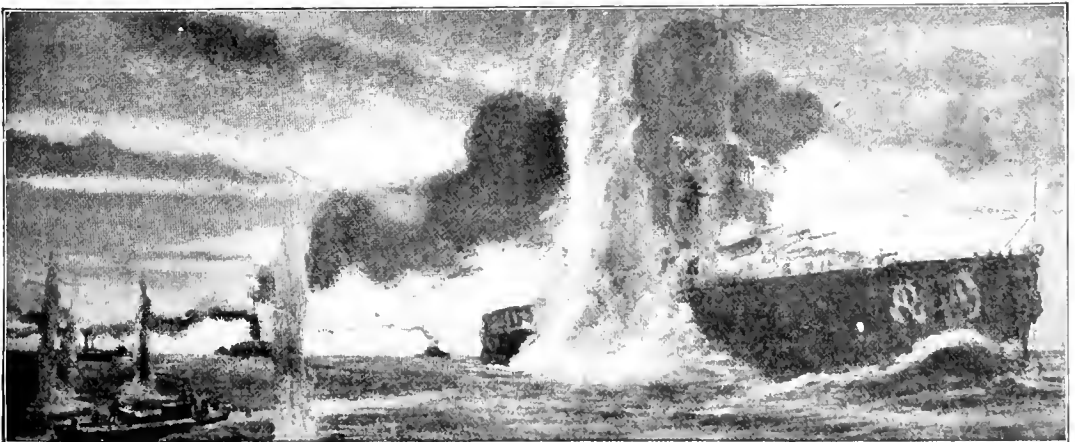
Suppose, for example, that a powerful combined British and French naval force had steamed through the Dardanelles up to Constantinople and demanded the surrender of the *Goeben* and *Breslau* because of Turkey's alleged violation of neutrality laws. Suppose, also, if Turkey had forbidden this passage and refused these demands, that the Allied force had fought its way through the Dardanelles and either captured or destroyed the *Goeben* and *Breslau* in spite of any armed resistance which might have been afforded. It

is, of course, problematical how much strength Turkey could have shown at this time, but it is not an unreasonable supposition that a resolute naval demonstration in the Dardanelles might have been successful and might have had a decisive influence on the wavering Turks, with consequently far-reaching effects upon the general course of the war.

Immediately upon the arrival of the *Goeben* and *Breslau*, Turkey, under the direction of German naval and military strategists, began to make ready for her entry into the war. The British Admiral Limpus and his staff, who had previously been employed to reorganize the Turkish Navy, were soon eliminated and superseded by a German admiral and German staff. A German liner previously employed in the East African trade arrived soon after the *Goeben*, having slipped through the Allied patrols. She carried a cargo of mines and other naval stores which were quickly put to use to guard the entrance to the Straits. At the same time heavy guns, munitions and other war stores were being imported across Rumania. From this time on, rapid progress was made in perfecting Turkish defenses, preparatory to the war declaration of October 31, 1914.*

*In some after-the-war articles widely published in the press, Lord Fisher of Kilverstone, the First Sea Lord of the British Admiralty, 1904-10, and recalled to that post in 1914, wrote as follows: "Again the *Goeben* and *Breslau*, which turned Turkey into an enemy, naturally escaped because the British battle cruisers that were in the Mediterranean were not used. If the great battle cruisers that were in the Mediterranean had gobbled up the *Goeben* and *Breslau*, as the *Invincible* afterward gobbled up their sister German ships at the Falklands, there would have been no Gallipoli and the Baltic would have been occupied and Berlin captured by Russians landing on the Pomeranian beach, safely covered by a British fleet."

NOTE—In the later operations in which the *Breslau* was sunk by mines, the *Goeben* also was mined and in returning to port in a damaged condition was run aground due to an error in navigation. The Turks succeeded, however, in hauling her off and she proceeded to Constantinople, where she was interned under the terms of the armistice. Although the *Goeben* was frequently reported as severely punished in Black Sea engagements it appears that she, in fact, suffered very little damage during the war.



THE DARDANELLES OPERATIONS

History of the Straits—The Defenses of Gallipoli—The Dardanelles Naval Attacks—The Landing at Gallipoli—Official Report—Politics Plus Strategy

I

THE STRAITS IN HISTORY *

THE Sea of Marmora and the winding straits that link it with the Ægean and the Euxine form a water frontier of some two hundred miles between Asia and Europe. This meeting place of the East and the West has been the source of some of the most momentous events in human history. The story begins in the twilight of legend. As the traveler approaches the Dardanelles from the south he sees on his right, in front of the Bithynian Olympus, the hill called Kag Dagb, which is the Mount Ida whence the gods watched the siege of Troy. In the plain between it and the sea flow Simois and Scamander, once choked with famous dead. There by the hill of Hissarlik stood "windy Ilium." The current of the Dardanelles made the Straits difficult for laden merchantmen, and it was the fashion to unload the ships at their mouth, tow them empty through the Straits, and carry the goods on pack horses across the plain of Troy. But Priam, King of Troy, exacted an unconscionable tribute from the harassed Greek traders, and the Trojan war was fought to abolish the impost. So, if we are to accept the speculations of modern scholars, it was not a woman's face that launched the thousand ships, but an early craving for tariff reform.

Across the Dardanelles Leander swam to meet his mistress Hero, the priestess of Aphrodite. There, at the Narrows, Xerxes, seeking to conquer Europe, transported his armies by a bridge of boats on their way to Thermopylae and Salamis; and a century and a half later Alexander the Great led his troops

by the same passage to the conquest of Asia. On its shores St. Paul heard the cry from Macedonia, "Come over and help us." At first Constantine would have built his capital there, but he preferred the Bosphorus, where stood the old Greek colony of Byzantium, for centuries the emporium of the Euxine commerce. The new city which rose around the Golden Horn became the ruling center of the Roman Empire. The transference of authority was a stroke of genius, for while the West went down in ruins before the incursions of the barbarian, Byzantium preserved for a thousand years the forms of Roman Imperialism and the culture of the ancient world.

A BARRIER DESIGNED BY NATURE

The Dardanelles was designed by nature as a protection to the capital on the Bosphorus against any naval incursion from the south. The Greek emperors of Byzantium, though they maintained formidable armies, seem to have neglected all questions of naval defense. In particular they made no serious attempts to fortify the approach from the Ægean. In the thirteenth century the Crusaders, forgetting the object of their expedition, and lured by the plunder of a rich capital, found little difficulty in bringing the Venetian fleet to the Dardanelles, and placing a Flemish count on the throne of Byzantium. Had they cared to maintain their conquest, they might have erected a formidable barrier against the Turks. But this Latin Empire was short lived, and the Greek monarchs who followed the Counts of Flanders had neither the energy nor the means to meet the danger that soon threatened them from Asia.

In the space of a hundred years the Ottoman Turks, nomads from Central Asia, had

* Condensed from *Nelson's History of the War*, by John Buchan.



Courtesy of Geo. H. Doran Co.

Map of the Dardanelles, the Sea of Marmora and the Bosphorus, the Approaches to Constantinople

made themselves masters of the Near East. They held the Asiatic shore of the Sea of Marmora, and Constantinople, weak and wealthy, was the inevitable object of their ambition. In 1358 they crossed the Narrows of the Dardanelles, occupied Gallipoli, and made the rocky peninsula a base for their career of European conquest. Presently they had overrun the Balkan lands, and their capital was Adrianople. The territory of the Eastern Empire was now confined to a few hundred square miles around the walls of the great city. The end came on May 29, 1453, when Mohammed II., the stern, black-bearded conqueror whose portrait hangs to-day in the Sultan's Treasure House, breached the walls of Constantinople and ended the reign of the Palæologi.

THE "CASTLES OF EUROPE AND ASIA"

The Turks were a martial people, with an eye for military needs. From the outset the Sultans of Constantinople realized that the defense of their capital and the existence of their empire depended upon their security against naval attack. Until the rise of the Russian power in comparatively modern times

there was no danger from the Black Sea. But it was all important to bar the western entrance of the Sea of Marmora, and the Turks had no sooner occupied Gallipoli than they began to fortify the Dardanelles. The "Castles of Europe and Asia" were erected at the entrance, which to-day have been replaced by the forts of Sedd-el-Bahr and Kum Kale. Higher up at the Narrows Sestos and Abydos were fortified—the "inner castles" of old descriptions. Besides these shore defenses a fleet of galleys and sailing craft was always kept at Gallipoli on a war footing.

In the year 400 the conspirator Gainas had led his Goths on rafts across the channel, and midway had been scattered by the Roman galleys. From that day till 1654 no attempt was made, save by the Turks, against the passage. In the latter year the Norwegian Adelen, acting as an Admiral of Venice, fought and defeated a Turkish fleet at the mouth of the Dardanelles, and seized Tenedos. But the shore forts barred all further progress. Had it not been for this impregnable barrier here erected by nature, the history of Europe in the last three hundred years might have been quite different.

DUCKWORTH'S FEAT IN 1807

The Turks seemed to have found the expedient which would make their capital secure. Nevertheless in 1807 the straits were passed. A British admiral, Sir, J. T. Duckworth, was sent by Collingwood from Cadiz with a powerful squadron to detach the Sultan from the French Alliance. He had orders to demand the surrender of the Turkish fleet, and in case of refusal to bombard Constantinople.

Duckworth's feat was remarkable, not because he encountered any effective resistance, but because of the risks he ran and the light which his experience casts upon all similar enterprises. It was no easy matter to convey a squadron of line-of-battle ships and frigates under sail through the narrow winding waters and against the heavy currents of the Dardanelles. The "castles" at the entrance opened fire, as did the Narrows forts, but with little effect. A show of resistance by a Turkish squadron at Gallipoli ended in its prompt destruction by a detachment under Sir Sidney Smith. Duckworth anchored before Constantinople, and it seemed as if his mission was successful.

But the French agent there, General Sébastiani, induced the Sultan to prolong negotiations till heavy batteries had been erected on the sea front. Duckworth might have silenced these, but by this time he had begun to see the difficulties of his position. Warships that have run past the forts of the Dardanelles without subduing them and without leaving garrisons to secure the passage are in grave jeopardy. When their supplies of food, water, and armaments are exhausted they can receive no more except by the grace of their enemies. It was this consideration that compelled Duckworth to retire before his mission was accomplished. He ran through the Dardanelles into the Ægean with the tide and the wind in his favor. The Turkish batteries opened fire—chiefly clumsy, medieval cannon, throwing stone balls, and mounted on slides formed of parallel balks of timber. They could not be trained to right or left, but could fire only when a ship came opposite their muzzles. Yet even this primitive artillery was formidable, several of our ships were hit and badly damaged, and there was

some loss of life. Duckworth's experience was such as to increase the reputation of the Dardanelles defenses.

STRAITS CLOSED AND FORTIFIED

For a decade after 1820 all Europe was arrayed against Turkey, and between her and Russia there was constant bickering. Presently the position changed, the Western Powers grew afraid of Russia's Mediterranean designs, and were more inclined to support Turkey against her. It is unnecessary to enter into the details of the troubled diplomacy of these years, but we may note that in 1841, by a treaty* signed by Russia, Britain, Prussia, Austria, and France, Turkey's right to keep the Dardanelles closed was made part of the public law of Europe. No ship of war could pass the straits without the express permission of the Sultan, and all merchantmen were to be examined at the entrance and show their papers. Each foreign embassy at Constantinople was allowed to keep at its disposal a small armed vessel.

When the Crimean War broke out the alliance of the Sultan was the necessary prelude to the passing of the Straits by the British and French Fleets. The first step taken was the fortification of the Isthmus of Bulair, on the advice of Sir John Burgoyne, and its occupation by the Allied troops. The Isthmus, a neck of land less than three miles wide between the Gulf of Saros and the Sea of Marmora, connects the Gallipoli peninsula with the mainland of Thrace. French and English engineers surveyed the ground and constructed a line of entrenchments from sea to sea, with redoubts in the center and at each end, known as Fort Victoria, Fort Sultan, and Fort Napoleon. At that time there was much ill-informed criticism of these steps, and some impatience that lines should be fortified so far from the theater of war. But the policy was wholly right. All operations on the Black Sea shores or on the Danube must depend upon a secure line of communications through the Dardanelles, and the Dardanelles could not be secure unless the Gallipoli peninsula were held.

* In 1871, when Russia denounced the clauses of the Treaty of Paris which forbade her to maintain a fleet in the Black Sea, a further convention was signed in London, confirming the treaty of 1841 and extending its provisions to the Bosphorus.

HORNBY ENTERS STRAITS—1878

We have seen that it was a British squadron under Duckworth that first forced the Dardanelles after they had been closed for centuries to the fleets of Europe. Since then the exploit had been only once repeated, and again by a British admiral. When in 1877, during the Russo-Turkish War, the Russian advance from the Danube seemed to imperil Constantinople, the Mediterranean Fleet was sent to Besika Bay, and the Admiralty dis-

"If the northern shore of the Dardanelles were occupied by the enemy, I think it very doubtful if we could play any material part, and if the Bosphorus was also under their command, it would be almost impossible. In the latter case we could not get even the Heraclea coal. In the former, our English supply of coal, our ammunition, and perhaps our food would, in my opinion, be stopped. This opinion depends on the topography of the north shore. If you will send for the chart of the Dardanelles, you will see that from three and a half miles below Kilid Bahar to Ak



© Underwood and Underwood.

The Dardanelles

In the distance is the Sea of Marmora, which was a veritable nest of Turkish mines during the war.

cussed with its commander, Sir Geoffrey Phipps Hornby, how it should be used to prevent a hostile occupation of the Turkish capital. . . . It was anticipated that if the British Fleet attempted the Dardanelles, Turkey might oppose it, or the Russians be in the possession of the northern shore. Hornby reported that, although the defense of the Straits had been greatly improved, he did not think the batteries would prevent him reaching the Sea of Marmora. But in a dispatch dated August 10, 1877, he pointed out that even after the Dardanelles were passed the situation of the fleet would be critical.

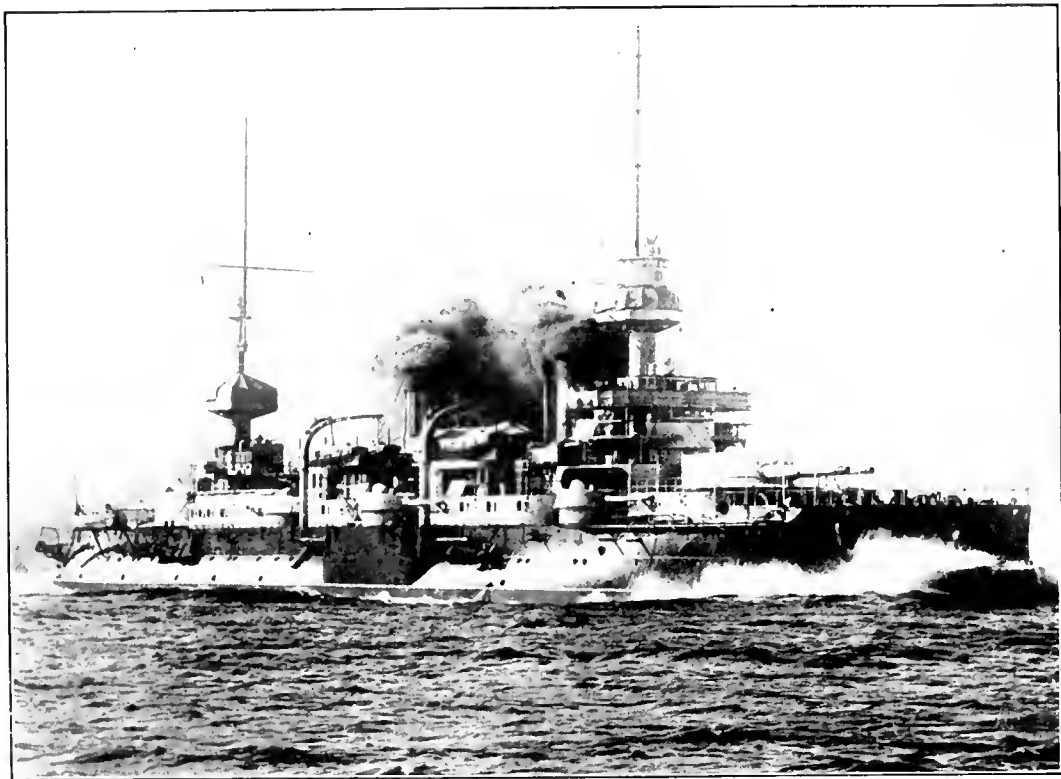
Bashi Imian, six and a half miles above it, an almost continuous cliff overhangs the shore line, while the Straits close to half a mile in one part,* and are never more than two miles wide. An enemy in possession of the peninsula would be sure to put guns on commanding points of those cliffs, all the more if the present batteries, which are *à fleur d'eau*, were destroyed. Such guns could not fail to stop transports and colliers, and would be most difficult for men-of-war to silence. We should have to fire at them with considerable elevation. Shots which were a trifle low would lodge harmlessly in the sand-

* Here Hornby makes a slip—"three-quarters of a mile" would be more correct.

stone cliffs; those a trifle high, would fly into the country without the slightest effect on the gunners, except amusement. It is for these reasons that the possession of the Bulair lines by a strong and friendly force seems to everyone here to be imperative, if now or hereafter you should want to act at Constantinople."

Here we have the importance of the Gallipoli peninsula pointed out by a practical sea-

spent some anxious days. He did not trust the Turkish commandant at Bulair, and expected at any moment to hear that the Russians had seized the lines there and cut off his squadron from supplies by getting command of the Dardanelles defenses. A rupture with Russia, however, was avoided, and Hornby's naval demonstration undoubtedly strengthened the hands of the British Government in



© Underwood and Underwood.

The Battleship *Suffren*

One of four French war vessels of the pre-dreadnought type that coöperated in the Dardanelles campaign.

man. . . . In January, 1878, when the Russians arrived before Constantinople, Hornby was directed to enter the Straits, and had actually brought up his fleet to the entrance when he was stopped by a telegram from the Admiralty. On February 12th he was ordered to pass the Straits without waiting for the Sultan's permit, and "if fired upon and his ships struck, to return the fire, but not to wait to silence the forts." As it happened, he passed through without fighting, and anchored in the Sea of Marmora. Here he

the negotiations which ended with the Treaty of Berlin.

GERMANS MOUNT KRUPP GUNS

During the Russian advance on Constantinople, Blum Pasha, a German officer in the Turkish service, had begun to strengthen the lines of Chatalja covering the land approach to the capital, but the works were not completed or armed when the Russians, having forced the passage of the Balkans, advanced

by Adrianople to the shores of the Sea of Marmora. After the Peace of Berlin Blum completed the Chatalja defenses, and planned new forts for the Bosphorus and the Dardanelles. At a later date, when German influence was supreme in Turkey, a very large number of heavy Krupp guns were mounted at both straits, and the Chatalja and Bulair lines were comprehensively rearmed. In 1912 the victorious advance of the Bulgarian Armies was checked at Chatalja. It was then arranged that, in order to enable the Greek Fleet to pass the Dardanelles, Bulgaria should attack the Bulair lines, and so get possession of the Gallipoli peninsula. But the enterprise came to nought, for the defense of Bulair was as successful as that of Chatalja.

The history of the Dardanelles has been told thus fully because, without some knowledge of it, it is not easy to understand the importance of the Straits to Turkey. Against a naval power like Britain or France they were the last defense of the capital, and that capital, more than any other great city of the world, was the palladium of the power which had its seat there. It was almost all that was left to the race of Osman of their once broad European possessions. It had been the base for those proud expeditions against Vienna and the Hungarian plains when Turkey was still a conquering power. It had been the prize for which her neighbors had lusted and which she had still retained against all rivals. It was, in a real sense, the sign visible of Turkey's existence as a sovereign. If Constantinople fell Turkey would fall, and the doom of the capital was sealed so soon as the Allied battleships entered the Sea of Marmora.

II

THE GALLIPOLI DEFENSES

THE northeastern end of the Dardanelles is distant from Constantinople about 130 miles.* The length of the Straits, which are winding and extremely difficult to navigate, is some thirty-three miles. The breadth varies from about 1,300 yards measured be-

tween the towns of Chanak, on the Asiatic coast, and Kilid Bahr, on the European shore, to four miles or five miles shortly after the entrance to the Straits from the Ægean Sea. A strong current runs from the Marmora towards the Mediterranean. When the wind blows from the northeast, that is, more or less straight down the Channel, the difficulties of navigation and the speed of the current are considerably increased.

The Dardanelle are bounded on the northwest by the Peninsula of Gallipoli, and on the southeast by the mainland of Asia Minor. The Peninsula of Gallipoli is a long, narrow tongue of land, some thirty-five miles in length. Its width is only three miles, when measured across the Isthmus of Bulair, lying as it does to the northeast of the town of Gallipoli. More to the southwest it widens out, only to narrow again to a breadth of about four miles in rear of the town of Maidos. The northwestern and western shores of the Peninsula are washed by the waters of the Gulf of Saros and of the Ægean Sea.

The coast rises in many places precipitously from the water's edge. Nearly the whole of the country in rear of Maidos and of Kilid Bahr consists of hills which, in many places, attain a height of 600 or 700 feet above the level of the sea. These hills are intersected by small, rocky valleys, with steep, almost precipitous, sides. Much of this country is covered with scrubby bushes about two feet high, but the area immediately to the west and southwest of Kilid Bahr is prettily wooded, the trees extending almost to the seashore.

The most important town on the Peninsula is Gallipoli, at the northeastern entrance to the Dardanelles. The only other places of any importance are Maidos and Kilid Bahr, lying much lower down the Peninsula, the latter-named village being situated at the narrowest part of the Channel. Both these towns would be practically unknown and neglected were it not for the strategic value of the country which surrounds them.

THE GALLIPOLI FORTS

The modern defenses of the Dardanelles, situated on the Peninsula of Gallipoli, may

* Condensed from an article reprinted in the *Living Age* from the *Contemporary Review*.

be studied from the full-page color map. Practically they may be divided into four groups:

(1) The two forts built to protect the outer entrance to the Channel, and lying in the immediate neighborhood of Cape Helles and of Sedd-el-Bahr. While we now know officially that these forts were armed with fairly big guns, their importance and power of resistance have always been considered as insignificant as compared with those constructed to guard the Narrows. In this first group should be included also two forts, or batteries, which are situated respectively about seven and a half miles and about nine and a half miles from the southwestern extremity of the Dardanelles. They are both placed close to the water's edge.

(2) The forts in rear of, and near, Kilid Bahr, and therefore on, or immediately below or above, the narrowest part of the Straits. These forts constitute by far the strongest portion of the defenses of the Straits. Here the shore literally bristles with redoubts—eleven in number—some being hidden among the trees which cover the hills, while others are dotted about right down to the water's edge.

(3) The forts built to the north and northeast of Maidos—forts which, therefore, lie within or above the narrowest part of the Channel. These defenses, of which there are four, are built upon the summits of the various hills which border this part of the Straits. They are so constructed as to be able to fire across the Channel towards Nagara Point, up the Dardanelles in the direction of Gallipoli, and down the Straits towards Chanak.

(4) The Bulair Lines. These defenses run across the Isthmus of Bulair, and thus defend the Peninsula of Gallipoli from an attack by a force advancing from the land side. They consist of three or four redoubts, connected by trenches constructed to cover the only road running into the Peninsula from the remainder of European Turkey. The importance of these lines has now been considerably diminished, because, as we now know, it is possible, by means of the fire of modern ships, to threaten and to cut off all means of communication by way of the Isthmus of Bulair. Equally well, and by the same method, it would be comparatively

easy to render ineffective the fire of these forts, were it necessary to give assistance and to support an attack delivered against the Peninsula from the mainland, an attack which would have to be conducted over the open, rolling, hilly ground which here extends from sea to sea.

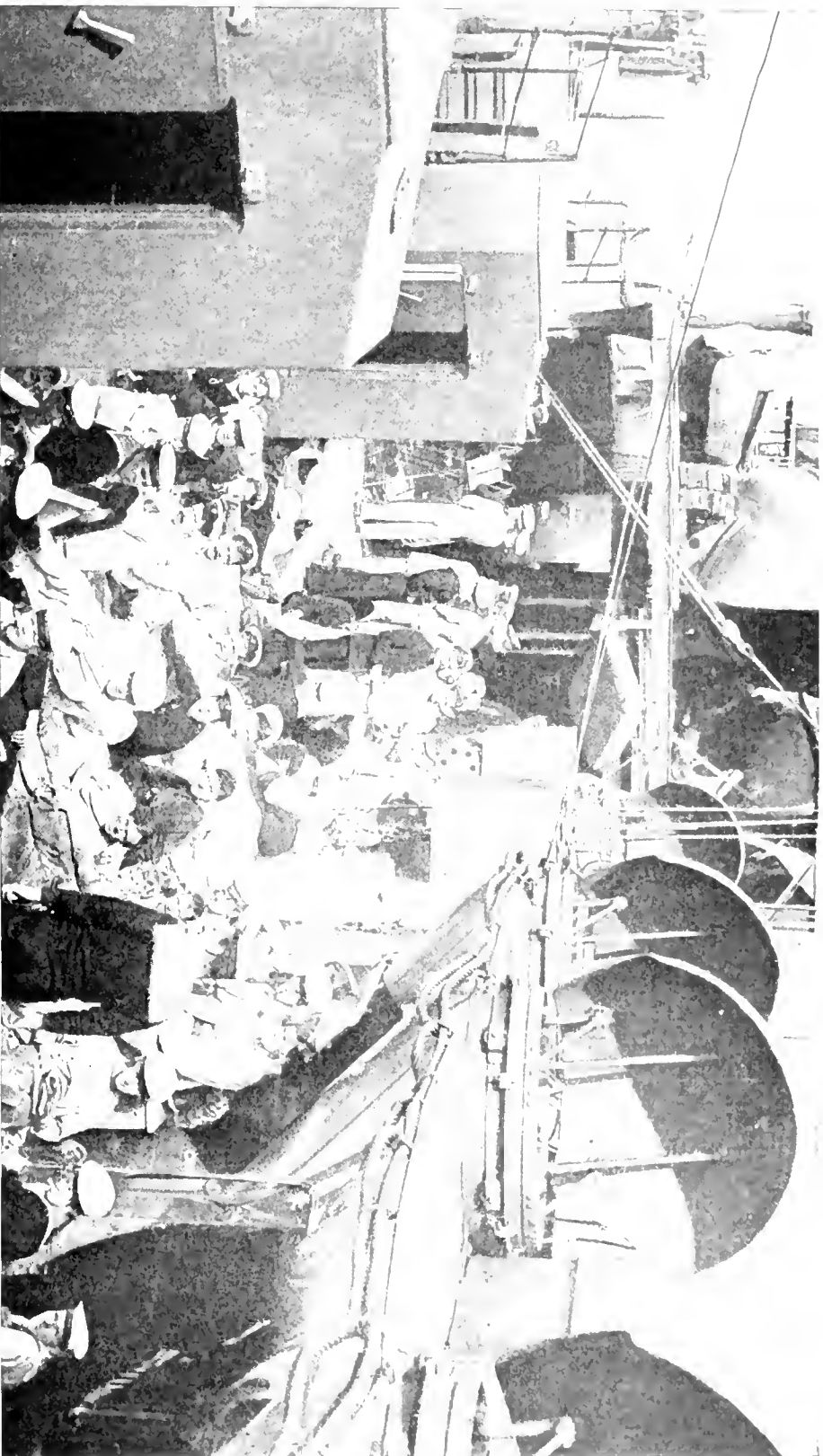
ON THE ADRIATIC SIDE

There is a great contrast between the two shores of the Dardanelles. The Asiatic coast is for the most part lower, and the appearance of the country is greener and more fertile than that of the Peninsula of Gallipoli. Communication by land is also bad, but a passable road connects Lapsaki (just opposite Gallipoli) with Chanak, and thence runs on down the coast towards the entrance of the Straits. The only center of any importance is Chanak or Dardanelles, situated opposite Kilid Bahr, and united with that place by a submarine cable. The town, which possesses a population of some 10,000 people, is prettily located on the water's edge. There is an anchorage for ships, both above and below it, and in the past the little bay immediately to the north of the village has usually been occupied by some of the ships which go to make up the Turkish Fleet. As a matter of fact, it was here that the *Messudiyeh* was torpedoed by the British submarine *B-11* on December 14, 1914.

Partly owing to their positions, situated for the most part more or less upon the level of the sea, the defenses of the Asiatic coast are, from a natural point of view, decidedly less strong than are those built upon the European side. These Asiatic forts may also be conveniently divided into three main or principal groups:

(1) The two forts built to protect the outer entrance of the Channel, which lie in the more or less immediate vicinity of Kum Kale. While we now know that these forts were armed with guns of a considerable size, they have always been considered, like those upon the European shore, as a sort of advanced guard to the main defenses of the Straits. In this outer group, too, I would also include the batteries located at Erenkeui, Dardanos Fort, and the redoubt situated on Kephez Point.

(2) The forts at and near the town of

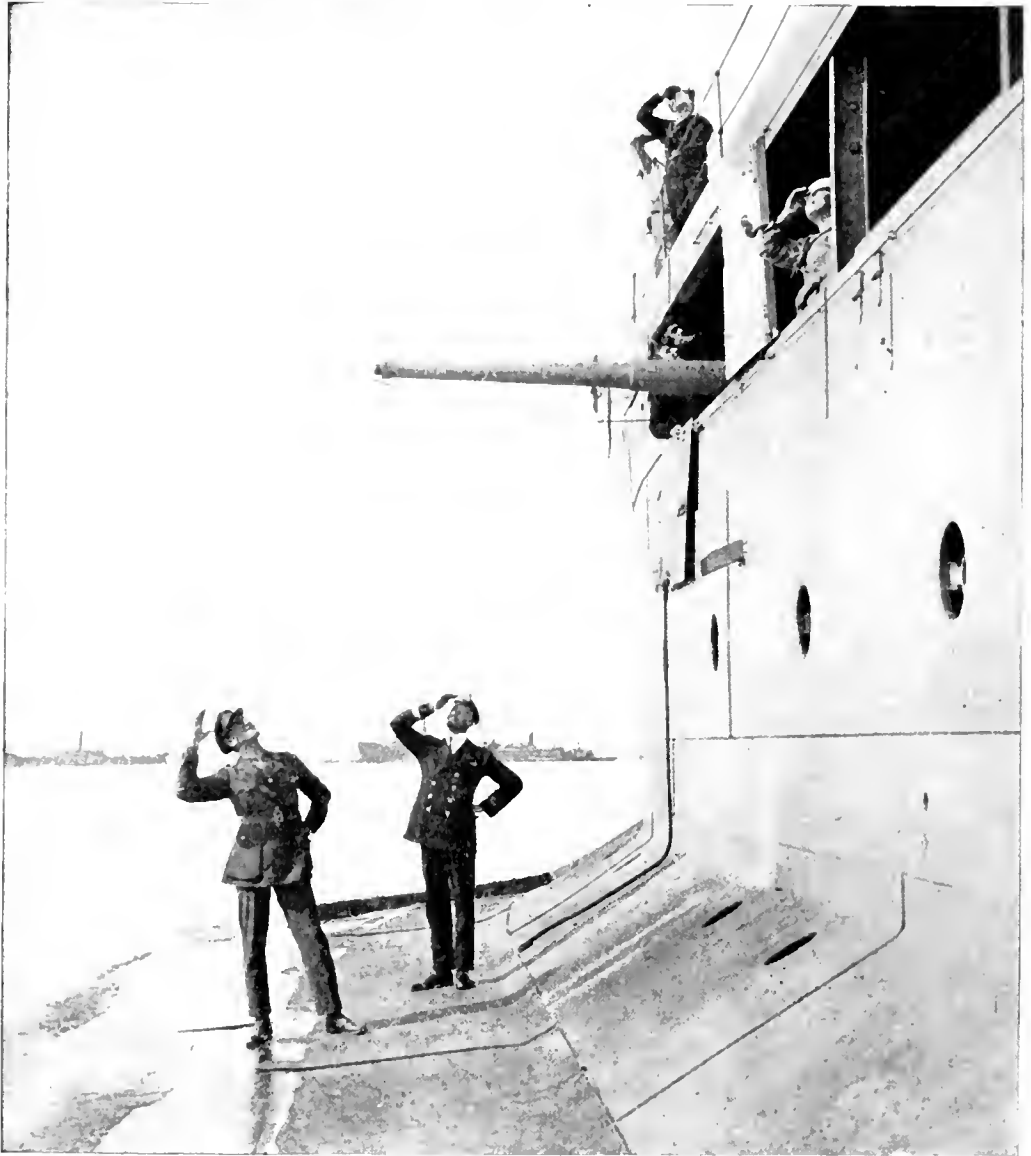


© American Press Association.

British Tars at Rest

Courtesy of Leslie's Weekly.

The British Navy had a strenuous time during the World War, and gave an impressive demonstration of the importance of sea power. Its personnel increased from 201,017 in 1914 to 407,316 in 1918. The ships of the Dardanelles Fleet, one of which is seen in the illustration, suffered severe losses from Turkish gunfire and from mines.



© International Film Service.

On Board a British Monitor

The original type of this low-lying iron-clad war vessel was Ericsson's *Monitor*, which fought the Confederate *Merrimac* in the American Civil War. Several of these useful vessels were employed at the Dardanelles, as well as in bombarding German bases on the Belgian coast.

Chanak, and therefore on or near the narrowest part of the Channel.

(3) The forts built on or in the neighborhood of Nagara Point, and therefore at a distance of about three and a half miles above the Narrows. These forts occupy a very strong position, owing to the way in which this Cape and also Cape Abydos run

out into the Channel, thus giving two of them good fields of fire in more than one direction.

IMPORTANCE OF LANDING TROOPS

The task of a fleet attempting to force a passage of the Dardanelles might be greatly furthered were a force landed on the north-

western coast of the Peninsula of Gallipoli, where in places the shore is low and sandy. . . . Such a disembarkation would naturally be a matter of very considerable difficulty, for it would probably be strongly opposed by a force located in the hills, a force which would be in an extremely strong position unless that position could be rendered untenable by fire directed from battleships lying in the *Ægean*.

An army once gaining possession of the hills which lie in rear of Maidos and of Kilit Bahr would be able to cut off the water supply of many of the European forts—a supply obtained through pipes from the hills in rear. Moreover, as most of the forts are open at the back, and as few, if any, of their guns can be fired otherwise than towards the Straits, such a force would, too, be able greatly to affect the accuracy of the aim, if not actually to silence the fire of the great Dardanelles guns which defend the all-important area of the Channel which has now grown to be known as the Narrows.

In addition to the fact that an army once occupying the hills in rear of Kilit Bahr would be able to threaten not only the European forts, but likewise those constructed on the Asiatic shores, it would also be possible for a force landed on the *Ægean* coast of Asia Minor to advance towards the Dardanelles. But to menace the Asiatic forts, situated on the Narrows, from the rear, would be a far more difficult undertaking than to occupy the hills of the Peninsula of Gallipoli. To begin with, these Asiatic forts cannot be commanded from the land in the same way as can the European defenses. Moreover, a force, disembarked from the *Ægean*, instead of being compelled to advance only a distance of about five miles, would have to undertake a march of at least twenty miles over an area of country in which no proper roads exist.

MANY BATTERIES OF KRUPP GUNS

As Germany grew in grace in Constantinople, so did she pay increasing attention to the Straits. Many of the heavy Krupp cannon sold to the Turkish Government in the decade before the World War found their way to Chanak and Kilit Bahr. The batteries increased in number, and those at the outer

entrance to the Straits were improved and modernized. The forts on both sides of the entrance to the Straits mounted at the beginning of 1915 some 10.2 and 9.2 guns, and several 10-inch guns. They were flanked by concealed field batteries. The armament of the more powerful forts at the Narrows included a number of 14-inch Krupp guns, as well as some of 11-inch caliber. Lighter guns and field howitzers were plentifully planted on the shores of the Straits, and there were a few heavier howitzers moving on lines of railway. There was believed to be a powerful battery on Nagara Point, where the Straits make a great bend and open out into the Sea of Marmora. The Dardanos Fort, overlooking Kephez Bay, was less formidable. After Nagara Point was passed there were no important defenses except at the lines of Bulair, where the batteries were not likely greatly to incommode an advancing squadron.

The chief strength of the defenses against a naval attack was concentrated at the Narrows, but it was further known that the defenders depended very largely upon their mine-fields and upon floating mines drifting with the current. They were also understood to have fixed in position some land torpedo-tubes.

III

DARDANELLES NAVAL ATTACKS

THE winding straits of the Dardanelles joining the *Ægean* with the Sea of Marmora together with the latter and the Bosphorus connecting it with the Black Sea, form an interocean highway about 150 miles long and navigable to all classes of ships. All the water-borne commerce from the Black Sea ports and the vast hinterland feeding them must pass along this narrow route. But, in addition, it is a crossroads. Athwart it runs an equally or perhaps more important land highway, in which roads leading into Asia on the one side and Europe on the other converge and intersect. This isthmus, thus cut by water, constitutes, therefore, the natural meeting-place of the East and West, the line of communications not only from the Black Sea to the Mediterranean by water,

but also from Europe to Asia by land, and because of their strategic value the question of possession and control of the Dardanelles has been an important influence in shaping the course of both ancient and modern history.

Turkey entered the war on October 31, 1914, and a combined Franco-British squadron at once established an effective blockade of the Dardanelles. On November 3, 1914, the outer forts were bombarded for about ten minutes by a British and French squadron. The purpose was evidently a *reconnaissance*, and range test of the defenses; whether this was helpful or detrimental to the plans of the Allies is at least questionable. There seems to have been no intention of pushing the attack home, and simply as a diversion or a test, at this time, it would appear calculated to put the enemy on guard without gaining any commensurate military advantage.

As early as November 25, 1914, the idea of making a serious attack on the Dardanelles was discussed at a meeting of the British War Council. In addition to political benefits expected to result from a military success in this war theater and the obvious value of opening a way to Russia's Black Sea ports, the argument was advanced that the best way to protect India and Egypt was to threaten Turkish communications, or better yet to cut them by capturing Constantinople. The Council admitted the points in favor of the project, but because of the critical situation on the Western front and the shortage of tonnage for transport service the question for the time being was dismissed.

On January 2, 1915, a telegram from Petrograd stating that Russia was hard pressed in the Caucasus and expressing the hope that a demonstration would be made against the Turks from some other quarter, spurred the British War Council to a reconsideration of the Dardanelles project. In the ensuing deliberations the need of Russia seems to have introduced a question of expediency which hampered the development of plans strictly in accord with sound military principles. This case in point illustrates the intimate relationship of policy and strategy in the conduct of war. Heavy responsibilities rest on statesmen and soldiers at the council table. Witness Russia to-day.

ENGLAND DECIDES TO TRY TO FORCE THE DARDANELLES

At this time naval and military opinion seems to have agreed that if a serious attack was to be made against the Dardanelles fortifications it was highly desirable to make it a joint naval and military operation.

The original estimate of the British War Office was that an army of 150,000 men would be required for a combined naval and military attack. The difficulty of supplying this force and the urgency of doing something for Russia led to a discussion of the advisability of making a purely naval demonstration with a view either to withdrawing if the opening bombardment were not successful, or continuing the attack with such military support as could be provided on the spot, if the results of the preliminary demonstration warranted further operations aiming at the ultimate capture of Constantinople.

In these discussions a strong opinion developed that the Dardanelles might be forced by the fleet alone, and in consequence, while the War Office made certain military preparations in the Eastern war theater, important transactions took place between the Admiralty office and Vice Admiral Carden, then commanding the British forces in the Mediterranean.

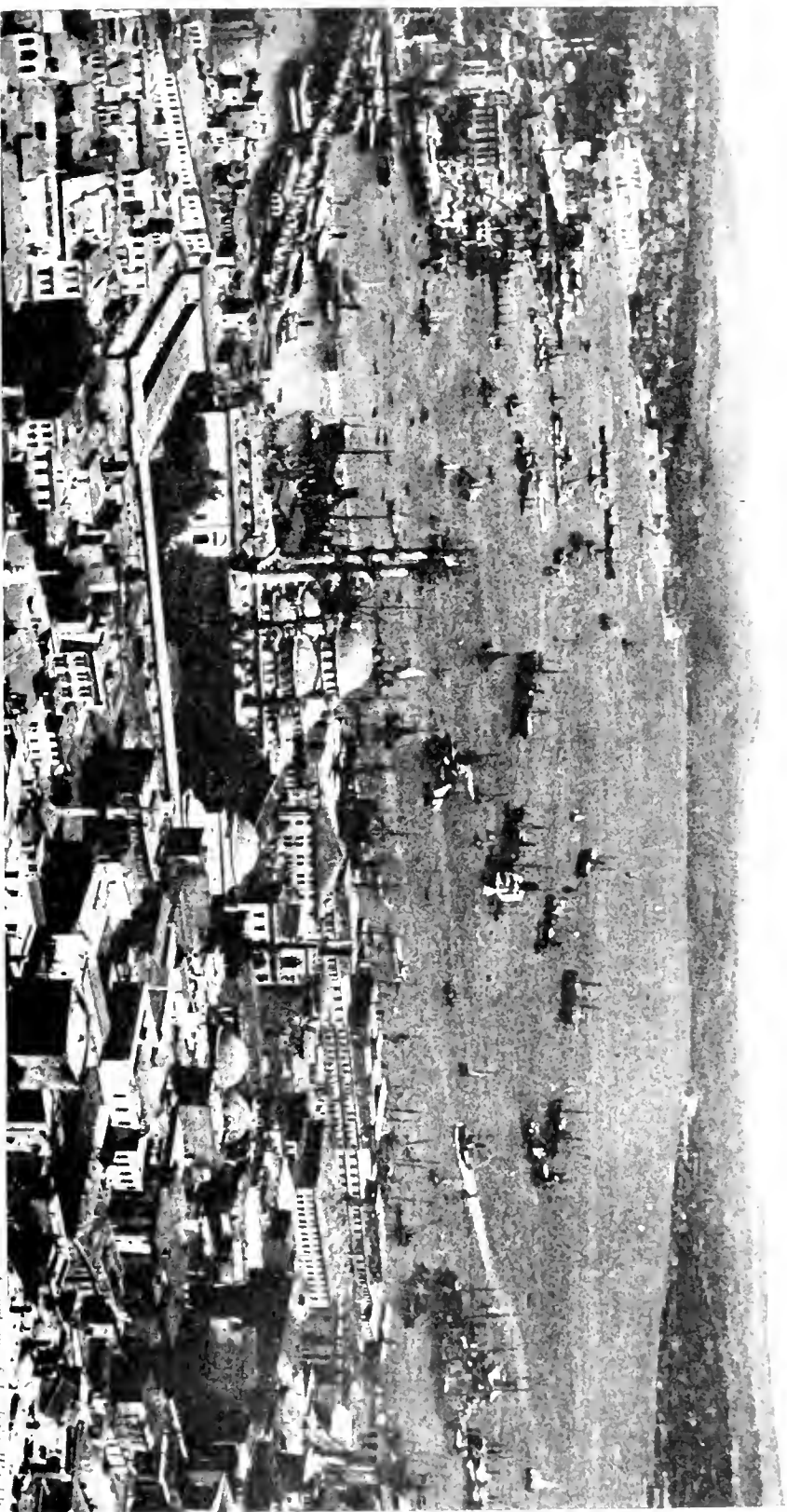
On January 3, 1915, the following telegram was dispatched from the Admiralty to Vice Admiral Carden:

"Do you think that it is a practical operation to force the Dardanelles by the use of ships alone? It is assumed that older battleships would be employed, that they would be furnished with mine sweepers, and that they would be preceded by colliers or other merchant vessels as sweepers and bumpers. The importance of the result would justify severe loss. Let us know what your views are."

On January 5th, Vice Admiral Carden replied to the Admiralty telegram of the third, in the following terms:

"I do not think that the Dardanelles can be rushed, but they might be forced by extended operations with a large number of ships."

On January 6th, the telegram following was sent from the First Lord to Vice Admiral Carden:



© Underwood and Underwood.

Constantinople

Courtesy of Leslie's Weekly.

This wonderful old city, the capital of the Byzantine Empire, has been for centuries the stronghold of Mohammedanism in Europe. Constantinople is situated on the straits of the Bosphorus and the Sea of Marmora. The Straits connect the Black Sea with Marmora and are heavily fortified. The Sea of Marmora is in turn connected with the Aegean Sea by the Dardanelles, a long narrow body of water, also heavily fortified.

"High authorities here concur in your opinion. Forward detailed particulars showing what force would be required for extended operations. How do you think it should be employed, and what results could be gained?"

THE BRITISH PLAN OF OPERATIONS

On January 11th, Vice Admiral Carden replied to the telegram sent to him from the Admiralty on the 6th. Four operations he said were possible. These were:

(a) The destruction of the defenses at the entrance to the Dardanelles.

(b) Action inside the Straits, so as to clear the defenses up to and including Cephez Point Battery N8.

(c) Destruction of defenses of the Narrows.

(d) Sweeping of a clear channel through the mine field and advance through the Narrows, followed by a reduction of the forts further up, and advance into the Sea of Marmora.

He estimated that it would take a month to carry out all these operations.

At a meeting of the War Council on January 13, 1915, a decision was made and this decision as noted by Premier Asquith reads:

"The Admiralty should prepare for a naval expedition in February to bombard and take the Gallipoli peninsula, with Constantinople as its objective."

On January 15th, the Chief of the Naval War Staff reported his opinion on Admiral Carden's proposal. His memorandum began with the following remark: "Concur generally in his plans." After dealing at some length with the detailed proposals this memorandum concluded by saying: "I would suggest (a) might be approved at once, as the experience gained would be useful." Unless the experience gained from (a) and (b) justified it, the undertaking of (c) and (d) was not recommended.

On February 16th, a very important informal meeting of ministers was held. Owing to events in Egypt and to changes in plans in the West, it was decided to mass a considerable military force in the Mediterranean to be used as occasion might require. The decisions, which were eventually incor-

porated with those of the War Council, were as follows:

"1. The 29th Division, hitherto intended to form part of Sir John French's army, to be dispatched to Lemnos at the earliest possible date. It is hoped it may be able to sail within nine or ten days.

"2. Arrangements to be made for a force to be dispatched from Egypt, if required.

"3. The whole of the above forces, in conjunction with the battalions of Royal Marines already dispatched, to be available in case of necessity to support the naval attack on the Dardanelles.

"4. Horse boats to be taken out with the 29th Division, and the Admiralty to make arrangements to collect small craft, tugs, and lighters in the Levant.

"5. The Admiralty to build special transports and lighters suitable for the conveyance and landing of a force of 50,000 men at any point where they may be required."

It had been intended that the 29th Division should be ready to sail for the Mediterranean by the 22nd of February, but on the 20th the War Office decided that the general situation was such that this division could not be dispatched as planned. On March 10th the situation on other fronts had changed and the War Office announced that the decision to send the 29th Division was again operative. This change of mind entailed a delay of three weeks in dispatching these troops.

In the meantime during January and February British and French forces in the Mediterranean were preparing for extensive operations against the Dardanelles. The island of Tenedos was seized. Under an agreement with Venizelos, the Greek Premier, the island of Lemnos was occupied, and Mudros with its large harbor converted into an advanced naval and military base. Lemnos was less than fifty miles from Gallipoli, while Tenedos was only twenty-two miles distant from the Turkish coast. It has been said that there was also an arrangement with Venizelos to supply a Greek military expeditionary force, but, as the event proved, this aid could not be relied on.

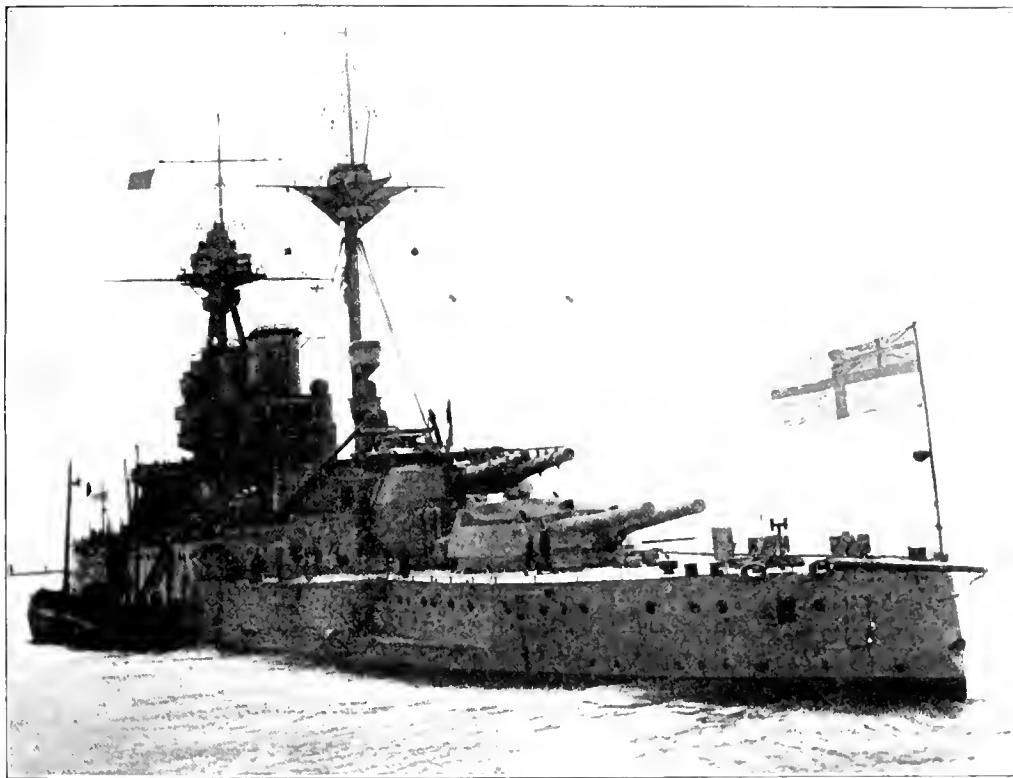
THE OPENING BOMBARDMENT

By the middle of February a large British fleet had been assembled, including the

new superdreadnought *Queen Elizabeth*, carrying 15-inch guns, the battle cruiser *Inflexible*, the predreadnought battleships *Agamemnon*, *Irresistible*, *Vengeance*, *Triumph*, *Albion*, *Lord Nelson*, *Ocean*, *Majestic*, and a number of light cruisers, destroyers, submarines, mine-sweepers, and other small craft. In addition to these the French contributed a fleet including the predreadnought battle-

French battleships closed the forts and by darkness apparently all the outer shore batteries had been silenced.

The demolition, however, did not prove permanent and bad weather prevented further operations until February 25th, when another bombardment took place and by five o'clock in the afternoon the forts had again been silenced.



Underwood and Underwood.

The Superdreadnought *Queen Elizabeth*

One of the newest and most powerful British war vessels. She was sent to the Dardanelles in the expectation that her 15-inch guns would silence the Turkish forts. For months the rumor persisted that she had been sunk.

ships *Charlemagne*, *Gaulois*, *Suffren*, and *Bouvet*, with attending destroyers and submarines.

Naval operations began on the morning of February 19, 1915, at 8.00 a. m., when the combined fleet, with Vice Admiral Carden in supreme command and Rear Admiral Guépratte in command of the French division, arrived off Gallipoli, and began a long range bombardment of the outer forts. In the middle of the afternoon three British and three

Mine-sweepers then cleared the way for the larger ships and on the next days a division of battleships steamed four miles up the straits and bombarded Fort Dardanos, a battery mounting 5.9-inch guns. This fort together with a number of concealed batteries was silenced and marines were then landed to complete the demolition. This work was successfully accomplished, except at Kum Kale, where a strong force of Turks drove the landing party back to their boats.

Bad weather again intervened, permitting the Turks to rehabilitate Fort Dardanos and the hidden shore batteries. On March 1st the operations were resumed and mine-sweepers cleared the channel to within one and one-half miles of the narrows. During the next four days the bombardment and demolition by landing parties went on. A French squadron bombarded the Turkish line of communications at Bulair, with the hope of embarrassing the enemy's food and munition supply, but without success. Also, as a diversion, a combined Allied fleet bombarded Smyrna, but this does not appear to have had much military significance.

BRITISH FAIL TO SILENCE THE FORTS

On March 6th and 7th violent naval attacks were made both by battleships well within the straits at close range and by the *Queen Elizabeth*, *Agamemnon*, and *Ocean* at long range from the Gulf of Saros. The indirect fire of these battleships was controlled by airmen, who watched the fall of shell striking beyond the heights of the Peninsula and signaled spot corrections to the ships. As the angle of fall was such that the European forts could not be reached, the indirect fire was concentrated on the forts near Chanak on the Asiatic side. It was thought that this bombardment caused the Turks much discomfiture, and that the 15-inch shrapnel from the *Queen Elizabeth* inflicted heavy losses. But the forts were not permanently silenced and although the heavy shrapnel fire was temporarily effective against enemy personnel there was not a sufficient number of high-explosive shells dropped in the fortifications to damage them beyond repair. The result of these bombardments appears to have been exaggerated both in the minds of the naval commanders on the spot and in the hopes of the Allied people at large.

From March 7th to March 18th, there was a lull in the operations at the Straits. It was realized that there would be need to land troops, and by March 15th the British forces gathered at Mudros together with the French force assembled at Bizerta totaled somewhat over 100,000 fighting men, while the naval forces had been increased to the strength indicated in the accompanying table.*

* *Naval Inst. Proc.*, pp. 1735 and 1736, 1915.

Soon after this concentration unforeseen difficulties intervened, and the plan for early joint operations did not materialize. Early in March it had been decided to send out Sir Ian Hamilton to command the troops being assembled near the Dardanelles. His instructions contained the following passage:

"The fleet has undertaken to force the passage of the Dardanelles. The employment of military forces on any large scale at this juncture is only contemplated in the event of the fleet failing to get through after every effort has been exhausted. Having entered on the project of forcing the Straits, there can be no idea of abandoning the scheme."

At this time, in March, important telegrams passed between the Admiralty and Admiral Carden. The First Lord, Mr. Winston Churchill, on March 11th, asked whether the time had not arrived when "You will have to press hard for a decision," adding: "Every well-conceived action for forcing a decision, even should regrettable losses be entailed, will receive our support."

In his reply Admiral Carden said:

"I consider stage when vigorous action is necessary for success has now been reached. I am of opinion that in order to insure my communication line immediately Fleet enters the Sea of Marmora, military operations on a large scale should be opened at once."

On March 15th the First Lord of the Admiralty sent another telegram to Admiral Carden, in which he said:

"When General Hamilton arrives on Tuesday night concert with him in any military operation on a large scale which you consider necessary. . . . The 29th Division (18,000 additional men) cannot arrive until April 2nd."

On March 16th, Admiral Carden was forced to resign his command for reasons wholly based on the state of his health. He was succeeded by Vice Admiral de Robeck. On March 17th Sir Ian Hamilton arrived at Lemnos to take chief command of the Allied Armies. A conference at once took place, attended by Vice Admiral de Robeck, Rear Admiral Guépratte commanding the French naval forces, General d'Amade commanding the French land forces, and Sir Ian Hamilton.

Allied Fleet at the Dardanelles

Name	Guns	Weight in Pounds of a Broadside Salvo	
		Heavy Guns	Secondary Guns
BRITISH BATTLESHIPS			
<i>Queen Elizabeth</i>	Eight 15-inch, twelve 6-inch	15,600	600
<i>Inflexible</i>	Eight 12-inch, sixteen 4-inch	6,800	372
<i>Lord Nelson</i>	Four 12-inch, ten 9 2-inch.....	5,300	...
<i>Agamemnon</i>	Four 12-inch, ten 9 2-inch.....	5,300	...
<i>Swiftsure</i>	Four 10-inch, fourteen 7 5-inch.....	3,312	...
<i>Triumph</i>	Four 10-inch, fourteen 7 5-inch.....	3,312	...
<i>Cornwallis</i>	Four 12-inch, twelve 6-inch.....	3,400	600
<i>Queen</i>	Four 12-inch, twelve 6-inch.....	3,400	600
<i>Implacable</i>	Four 12-inch, twelve 6-inch.....	3,400	600
<i>London</i>	Four 12-inch, twelve 6-inch.....	3,400	600
<i>Irresistible</i>	Four 12-inch, twelve 6-inch.....	3,400	600
<i>Goliath</i>	Four 12-inch, twelve 6-inch.....	3,400	600
<i>Ocean</i>	Four 12-inch, twelve 6-inch.....	3,400	600
<i>Vengeance</i>	Four 12-inch, twelve 6-inch.....	3,400	600
<i>Albion</i>	Four 12-inch, twelve 6-inch.....	3,400	600
<i>Canopus</i>	Four 12-inch, twelve 6-inch.....	3,400	600
<i>Prince George</i>	Four 12-inch, twelve 6-inch.....	3,400	600
<i>Majestic</i>	Four 12-inch, twelve 6-inch.....	3,400	600
BRITISH CRUISERS, ETC.			
<i>Euryalus</i>	Two 9 2-inch, twelve 6-inch.....		1,360
<i>Dublin</i>	Eight 6-inch.....		500
<i>Minerva</i>	Eleven 6-inch.....		600
<i>Doris</i>	Eleven 6-inch.....		600
<i>Talbot</i>	Eleven 6-inch.....		600
<i>Phaeton</i>	Two 6-inch, eight 4-inch.....		355
<i>Amethyst</i>	Twelve 4-inch.....		217
<i>Sapphire</i>	Twelve 4-inch.....		217
<i>Ilussar</i>	Two 4 7-inch, four 6-pounders.....		102
BRITISH MONITOR			
<i>Humber</i>	Two 6-inch, two 4 7-inch.....		290
BRITISH DESTROYERS			
<i>Scorpion</i>	One 4-inch, three 12-pounders		
<i>Wolverine</i>	One 4-inch, three 12-pounders		
<i>Pincher</i>	One 4-inch, three 12-pounders		
<i>Renard</i>	One 4-inch, three 12-pounders.....		
<i>Chelmer</i>	Four 12-pounders.....		
FRENCH BATTLESHIPS			
<i>Suffren</i>	Four 12-inch, ten 6 4-inch.....	3,880	495
<i>Gaulois</i>	Four 12-inch, ten 5 5-inch.....	3,880	530
<i>Charlemagne</i>	Four 12-inch, ten 5 5-inch.....	3,880	530
<i>St. Louis</i>	Four 12-inch, ten 5 5-inch.....	3,880	530
<i>Bouvet</i>	Two 12-inch, two 10 8-inch, eight 5 5-inch.....	2,000	308
<i>Henri IV</i>	Two 10 8-inch, seven 5 5-inch	1,124	204
<i>Jauréguiberry</i> ...	Two 12-inch, two 10 8-inch, eight 5 5-inch.....	2,416	204
FRENCH CRUISERS			
<i>Kléber</i>	Eight 6 5-inch, four 3 9-inch.....		754
<i>Jeanne d'Arc</i>	Two 7 6-inch, fourteen 5 5-inch		763
<i>D'Entrecasteaux</i> ...	Two 9 4-inch, twelve 5 5-inch.....		1,146
RUSSIAN CRUISER			
<i>Askold</i>	Twelve 6-inch.....		623

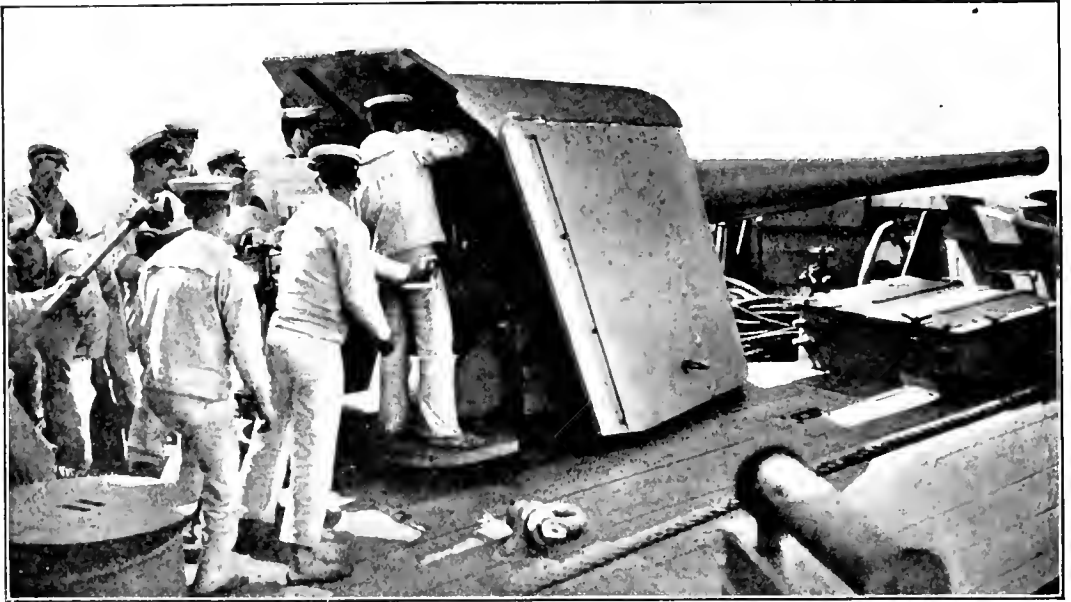
THE FATAL ERROR OF THE CAMPAIGN

At about this time it was discovered that the transports had been improperly loaded; guns and munitions needed at once on landing were inaccessible, being buried under tents and other supplies. Sir Ian Hamilton strongly demurred against launching a land attack immediately and made the point that in order to assure an effective landing practically the entire transport fleet must return to

The decision to delay the landing of troops did not deter Vice Admiral de Robeck from carrying out the naval attack. On March 17th the Allied Fleet sailed from Mudros, arriving off the Straits at daylight on the 18th.

THREE SHIPS SUNK BY TURKISH MINES

The serious losses to the Allies during the bombardment of this date are told in an official statement from the British and French



The Gun and Gun Crew of a British Monitor

Egypt and be reloaded. (See military account of the Gallipoli expedition in Vol. III.)

The decision of the conference hung on two alternatives—whether to make a combined attack at once under the handicap of improperly loaded transports, or to delay the land attack until the difficulty could be corrected with the penalty of losing valuable time. The latter course was decided upon and many hold that it was the fatal error of the campaign. It gave the Turks time to organize their defense.

Enver Pasha, the Turkish leader, is reported to have declared at a later date: "Their delay enabled us thoroughly to fortify the Peninsula, and in six weeks' time we had taken down there over two hundred Austrian Skoda guns."

Admiralties from which the following extracts are taken:

Mine-sweeping having been in progress inside the Straits, a general attack was delivered by the British and French Fleets March 18th on the fortresses at the Narrows. At 10.45 a. m. the *Queen Elizabeth*, *Inflexible*, *Agamemnon* and *Lord Nelson* bombarded forts, while the *Triumph* and the *Prince George* fired at batteries. A heavy fire was opened on the ships. At 12.22 p. m. the French squadron, consisting of the *Suffren*, *Gaulois*, *Charlemagne* and *Bouvet*, advanced up the Dardanelles and engaged the forts at closer range, and the forts replied strongly. Their fire was silenced by the 10 battleships inside the Straits, all the ships being hit several times during this part of the action. By 1.25 p. m. all the forts had ceased firing. The *Vengeance*, *Irresistible*, *Albion*, *Ocean*.

Swiftsure and *Majestic*, then advanced to relieve the six old battleships inside the Straits. As the French squadron, which had engaged the forts in a most brilliant fashion, was passing out, the *Bouvet* was blown up by a drifting mine. She sank in 36 fathoms in less than three minutes. At 2.36 p. m. the relief battleships renewed the attack on the forts, which again opened fire. The attack on the forts was maintained, while the operations of the mine sweepers continued.

At 4.09 p. m. the *Irresistible* quit the line, listing heavily, and at 5.50 p. m. sank, having probably struck a drifting mine. At 6.05 p. m. the *Ocean*, having also struck a mine, sank. Both vessels sank in deep water, practically the whole of their crews having been removed safely under a hot fire. The *Gaulois* was damaged by gun fire. The *Inflexible* had her forward control position hit by a heavy shell and required repair. The bombardment and the mine-sweeping operations terminated when darkness fell. The losses of the ships were caused by mines drifting with the current, which were encountered in areas hitherto swept clear, and this danger will require special treatment.

The British casualties among personnel were not heavy, considering the scale of the operations, but practically the whole of the crew of the *Bouvet* was lost with the ship, an internal explosion apparently having supervened on the explosion of the mine.

Vice Admiral de Robeck said, in part: "The power of the fleet to dominate the fortresses by superiority of fire seems to be established. Various other dangers and difficulties will have to be encountered, but nothing has happened which justifies the belief that the cost of the undertaking will exceed what always has been expected and provided for. The British casualties in the personnel are sixty-one men killed, wounded and missing. I desire to bring to the notice of Your Lordships the splendid behavior of the French squadron. Their heavy loss leaves them quite undaunted. They were led into close action by Rear Admiral Guépratte with greatest gallantry."

On March 19th Admiral de Robeck telegraphed the Admiralty that having had a satisfactory interview with Sir Ian Hamilton, General d'Amade and Admiral Wemyss, he proposed to proceed with the attack on the following day. It is significant that a meeting of the War Council in London was held

on the same day of this dispatch, March 19th, at which it was decided "to inform Vice Admiral de Robeck that he could continue the naval operations against the Dardanelles if he thought fit." The attitude of Sir Ian Hamilton and the menace of mines and torpedoes, however, influenced Admiral de Robeck to



Vice Admiral De Robeck

Who succeeded Vice Admiral Carden as Commander of the Allied Fleet in the Dardanelles.

change his mind and discontinue naval operations.

HAMILTON FAVORED COMBINED NAVAL AND MILITARY OPERATION

Sir Ian Hamilton had witnessed the naval attack of March 18th and telegraphed the War Office on the 19th: "I have not yet received any report on the naval action, but from what I actually saw of the extraordinarily gallant attempt made yesterday I am being most reluctantly driven towards the conclusion that the Dardanelles are less likely to be forced by battleships than at one time seemed probable, and that if the Army is to participate its operations will not assume the subsidiary form anticipated. The Army's

share will not be a case of landing parties for the destruction of forts, etc., but rather a case of a deliberate and progressive military operation carried out in force in order to make good the passage of the Navy."

On March 23rd another telegram from Sir Ian Hamilton said: "I have now conferred with Admiral de Robeck and we are equally convinced that to enable the fleet effectively to force the passage of the Dardanelles the coöperation of the whole military force will be necessary." On the same day Admiral de Robeck telegraphed the Admiralty that the mine menace was proving greater than he had expected; that time was required to make arrangements to meet this menace; that a decisive operation about the middle of the next month appeared better than to take great risks for accomplishing what might well prove to be only half measures; and that it did not appear practicable to land a sufficient force inside the Dardanelles to carry out the service. On the 26th he added: "The check on the 18th is not, in my opinion, decisive, but on the 22nd of March I met General Hamilton and heard his views, and I now think that, to obtain important results and to achieve the object of the campaign, a combined operation will be essential."

From this time onward two points became perfectly clear. One was that the government had no intention of abandoning the attack on the Dardanelles; the second was that the attack would be made both by the Navy and by military forces employed on a large scale. Sir Ian Hamilton withdrew to Egypt to reload the transports and perfect preparations for landing in force, while the combined fleets made the necessary arrangements to do their share when the time came for making the grand effort.

IV

THE LANDING AT GALLIPOLI

THE abortive attempts of the British and French squadrons to force the Dardanelles were followed about six weeks later (April 25th to 26th) by the famous combined land and sea attack, in which the Allied troops attained at a great cost a slight footing on the peninsula. (The military ac-

count of this remarkable operation and its disastrous sequel will be found in Vol. III.) The guns of the fleet afforded a covering fire for the troops, but there was no serious bombardment of the point of landing. The Turks evidently had made the most of the six weeks' delay and were well prepared.

The participation of the Navy is told in Admiral de Robeck's dispatch which reads as follows:

ADMIRAL DE ROBECK'S DISPATCH

Triad, July 1, 1915.

I have the honor to forward herewith an account of the operations carried out on the 25th and 26th of April 1915, during which period the Mediterranean Expeditionary Force was landed and firmly established in the Gallipoli Peninsula.

The landing commenced at 4.20 a. m. on the 25th. The general scheme was as follows:—

Two main landings were to take place—the first at a point just north of Gaba Tepe, the second on the southern end of the peninsula. In addition a landing was to be made at Kum Kale, and a demonstration in force to be carried out in the Gulf of Xeros (Saros) near Bulair.

The night of the 24th-25th was calm and very clear, with a brilliant moon, which set at 3 a. m.

The first landing, north of Gaba Tepe, was carried out under the orders of Rear-Admiral C. F. Thursby, C.M.G. His squadron consisted of the following ships:—

Battleships	Cruiser	Destroyers	Seaplane Carrier	Trawlers	Balloon Ship
<i>Queen London Prince of Wales Triumph Majestic</i>	<i>Bacchante</i>	<i>Beagle Bulldog Foxhound Scourge Colne Usk Chelmer Ribble</i>	<i>Ark Royal</i>	15	<i>Manica</i>

To *Queen*, *London*, and *Prince of Wales* was delegated the duty of actually landing the troops; to *Triumph*, *Majestic*, and *Bacchante* the duty of covering the landing by gunfire.

In this landing a surprise was attempted. The first troops to be landed were embarked in the battleships *Queen*, *London*, and *Prince of Wales*.

The squadron then approached the land at 2.58 a. m. at a speed of 5 knots. When within

a short distance of the beach selected for landing the boats were sent ahead. At 4.20 a. m. the boats reached the beach, and a landing was effected.

The remainder of the infantry of the covering force were embarked at 10 p. m., 24th.

The troops were landed in two trips, the operation occupying about half an hour; this in spite of the fact that the landing was vigorously opposed, the surprise being only partially effected.

The disembarkation of the main body was

was one which called for great determination and coolness under fire, and the success achieved indicates the spirit animating all concerned. In this respect I would specially mention the extraordinary gallantry and dash shown by the 3rd Australian Infantry Brigade (Colonel E. G. Sinclair MacLagan, D.S.O.), who formed the covering force. Many individual acts of devotion to duty were performed by the personnel of the Navy; these are dealt with below. Here I should like to place on record the good service performed by the vessels em-



© Underwood and Underwood.

A Daring Landing at Gallipoli

Boats filled with British troops are being towed by steam pinnaces from a battleship. These boats came under fire from the Turkish guns after they were photographed.

at once proceeded with. The operations were somewhat delayed owing to the transports having to remain a considerable distance from the shore in order to avoid the howitzer and field-gun fire brought to bear on them, and also the fire from warships stationed in the Narrows at Chanak.

THE LANDING AT GABA TEPE

The beach here was very narrow and continuously under shell fire. The difficulties of disembarkation were accentuated by the necessity of evacuating the wounded; both operations proceeded simultaneously. The service

played in landing the second part of the covering force; the seamanship displayed, and the rapidity with which so large a force was thrown on the beach, are deserving of the highest praise.

On the 26th the landing of troops, guns, and stores continued throughout the day; this was a most trying service, as the enemy kept up an incessant shrapnel fire, and it was extremely difficult to locate the well-concealed guns of the enemy. Occasional bursts of fire from the ships in the Narrows delayed operations somewhat, but these bursts of fire did not last long, and the fire from our ships always drove the enemy's ships away.

The enemy heavily counter-attacked, and though supported by a very heavy shrapnel fire he could make no impression on our line, which was every minute becoming stronger. By nightfall on the 26th April our position north of Gaba Tepe was secure.

LANDING AT BEACHES "Y" AND "X"

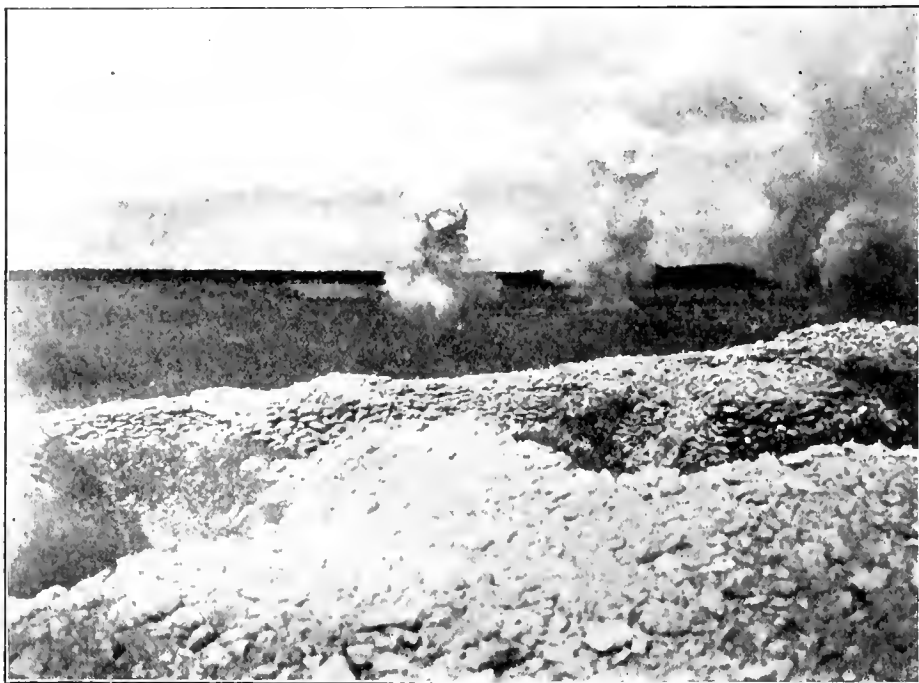
The landing at the southern extremity of the Gallipoli Peninsula was carried out under the orders of Rear-Admiral R. E. Wemyss,

landing varied considerably. The position of beaches is given below.

Position of Beach.—"Y" beach, a point about 7,000 yards north-east of Cape Tekeh. "X" beach, 1,000 yards north-east of Cape Tekeh. "W" beach, Cape Tekeh—Cape Helles. "V" beach, Cape Helles—Sedd-el-Bahr. Camber, Sedd-el-Bahr. "S" beach, Eski-Hissarlik Point.

Taking these landings in the above order:—

Landing at "Y" Beach.—The troops to be first landed, the King's Own Scottish Borderers,



Shelling Trenches and Wire Entanglements

The British and French warships aided the landing forces greatly by shelling the Turkish fortifications before the Anzacs went over the top in a charge.

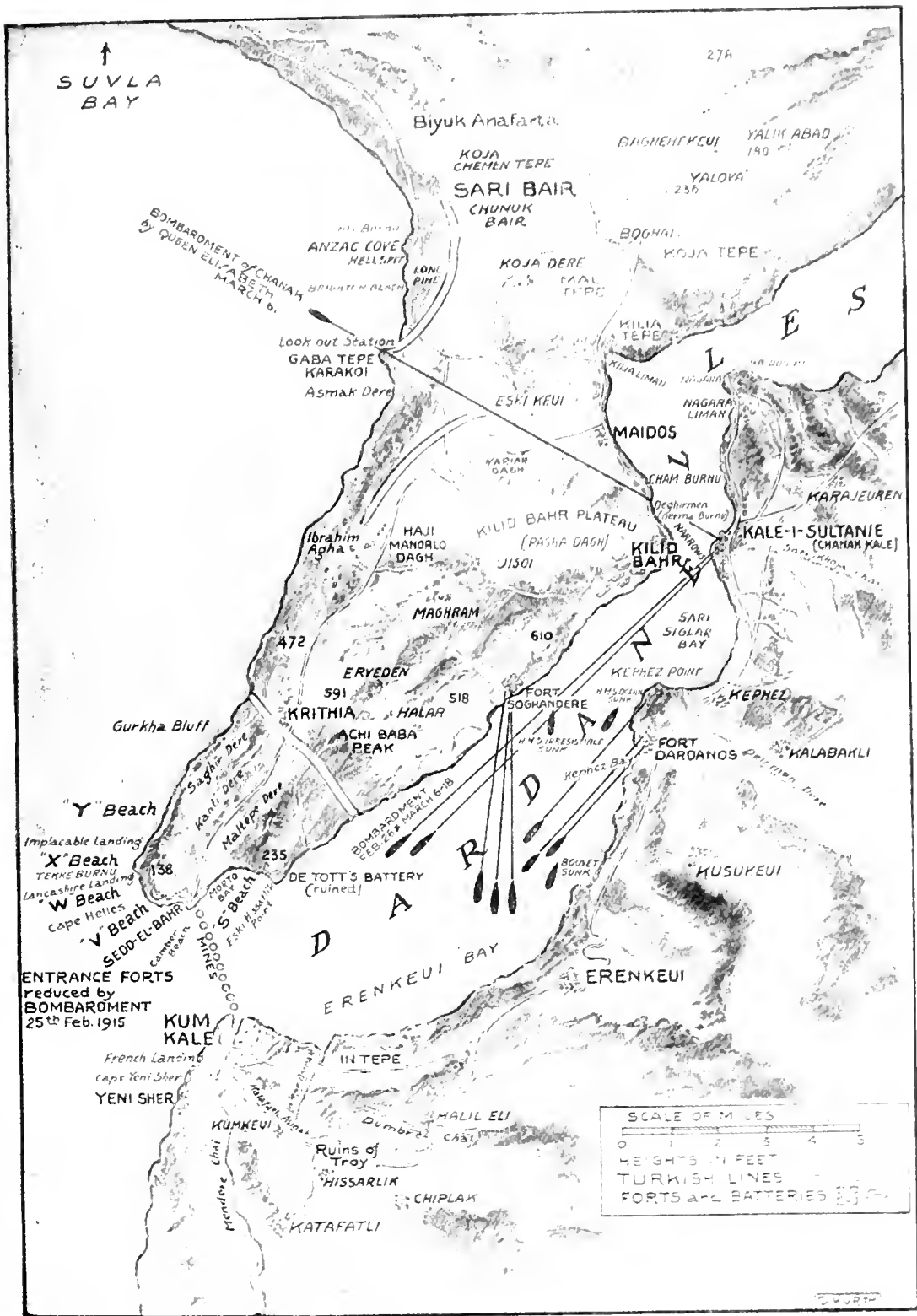
C.M.G., M.V.O., his squadron consisting of the following ships:—

Battleships	Cruisers	Fleet Sweepers	Trawlers
<i>Swiftsure</i> <i>Implacable</i> <i>Cornwallis</i> <i>Albion</i> <i>Vengeance</i> <i>Lord Nelson</i> <i>Prince George</i>	<i>Euryalus</i> <i>Talbot</i> <i>Minerva</i> <i>Dublin</i>	6	14

Landings in this area were to be attempted at five different places; the conditions at each

embarked on the 24th in the *Amethyst* and *Sapphire*, and proceeded with the transports *Southland* and *Braemar Castle* to a position off Cape Tekeh. At 4 a. m. the boats proceeded to "Y" beach, timing their arrival there at 5 a. m., and pulled ashore covered by fire from H. M. S. *Goliath*. The landing was most successfully and expeditiously carried out, the troops gaining the top of the high cliffs overlooking this beach without being opposed; this result I consider due to the rapidity with which the disembarkation was carried out and the well-placed covering fire from ships.

The Scottish Borderers were landed in two trips, followed at once by the Plymouth Bat-





talion Royal Marines. These troops met with severe opposition on the top of the cliffs, where fire from covering ships was of little assistance, and, after heavy fighting, were forced to re-embark on the 26th. The re-embarkation was carried out by the following ships: *Goliath*, *Talbot*, *Dublin*, *Sapphire*, and *Amethyst*. It was most ably conducted by the beach personnel and covered by the fire of the warships, who prevented the enemy reaching the edge of the cliff, except for a few snipers.

Landing at "X" Beach.—The 2nd Battalion Royal Fusiliers (two companies and M. G. Section) embarked in *Implacable* on 24th, which ship proceeded to a position off the landing-place, where the disembarkation of the troops commenced at 4.30 a. m., and was completed at 5.15 a. m.

A heavy fire was opened on the cliffs on both sides. The *Implacable* approached the beach, and the troops were ordered to land, fire being continued until the boats were close into the beach. The troops on board the *Implacable* were all landed by 7 a. m., without any casualties. The nature of the beach was very favourable for the covering fire from ships, but the manner in which this landing was carried out might well serve as a model.

LANDING AT BEACH "W"

The 1st Battalion Lancashire Fusiliers embarked in *Euryalus* and *Implacable* on the 24th, who proceeded to positions off the landing-place, where the troops embarked in the boats at about 4 a. m. Shortly after 5 a. m. *Euryalus* approached "W" beach and *Implacable* "X" beach. At 5 a. m. the covering ships opened a heavy fire on the beach, which was continued up to the last moment before landing. Unfortunately this fire did not have the effect on the extensive wire entanglements and trenches that had been hoped for, and the troops, on landing at 5 a. m., were met with a very heavy fire from rifles, machine guns, and pom-poms, and found the obstructions on the beach undamaged. The formation of this beach lends itself admirably to the defence, the landing-place being commanded by sloping cliffs offering ideal positions for trenches and giving a perfect field of fire. The only weakness in the enemy's position was on the flanks, where it was just possible to land on the rocks and thus enfilade the more important defences. This landing on the rocks was effected with great skill, and some Maxims, cleverly concealed in the cliffs and which completely enfiladed the main beach, were rushed with the bayonet.

This assisted to a great extent in the success of the landing; the troops, though losing very heavily, were not to be denied, and the beach and the approaches to it were soon in our possession.

The importance of this success cannot be overestimated; "W" and "V" beaches were the only two of any size in this area on which troops, other than infantry, could be disembarked, and failure to capture this one might have had serious consequences, as the landing at "V" was held up. The beach was being continuously sniped, and a fierce infantry battle was carried on round it throughout the entire day and the following night. It is impossible to exalt too highly the service rendered by the 1st Battalion Lancashire Fusiliers in the storming of the beach; the dash and gallantry displayed were superb. Not one whit behind in devotion to duty was the work of the beach personnel, who worked untiringly throughout the day and night, landing troops and stores under continual sniping. The losses due to rifle and machine-gun fire sustained by the boats' crews, to which they had not the satisfaction of being able to reply, bear testimony to the arduous nature of the service.

During the night of the 25th-26th enemy attacked continuously, and it was not till 1 p. m. on the 26th, when "V" beach was captured, that our position might be said to be secure.

The work of landing troops, guns, and stores continued throughout this period, and the conduct of all concerned left nothing to be desired.

LANDING AT BEACH "V"

This beach, it was anticipated, would be the most difficult to capture; it possessed all the advantages for defence which "W" beach had, and in addition the flanks were strongly guarded by the old castle and village of Sedd-el-Bahr on the east and perpendicular cliffs on the west; the whole foreshore was covered with barbed-wire entanglements which extended in places under the sea. The position formed a natural amphitheater with the beach as stage.

The first landing here, as at all other places, was made in boats; but the experiment was tried of landing the remainder of the covering force by means of a collier, the *River Clyde*. This steamer had been specially prepared for the occasion under the directions of Commander Edward Unwin; large ports had been cut in her sides and gangways built whereby the troops could reach the lighters which were to form a bridge on to the beach.

"V" beach was subjected to a heavy bom-

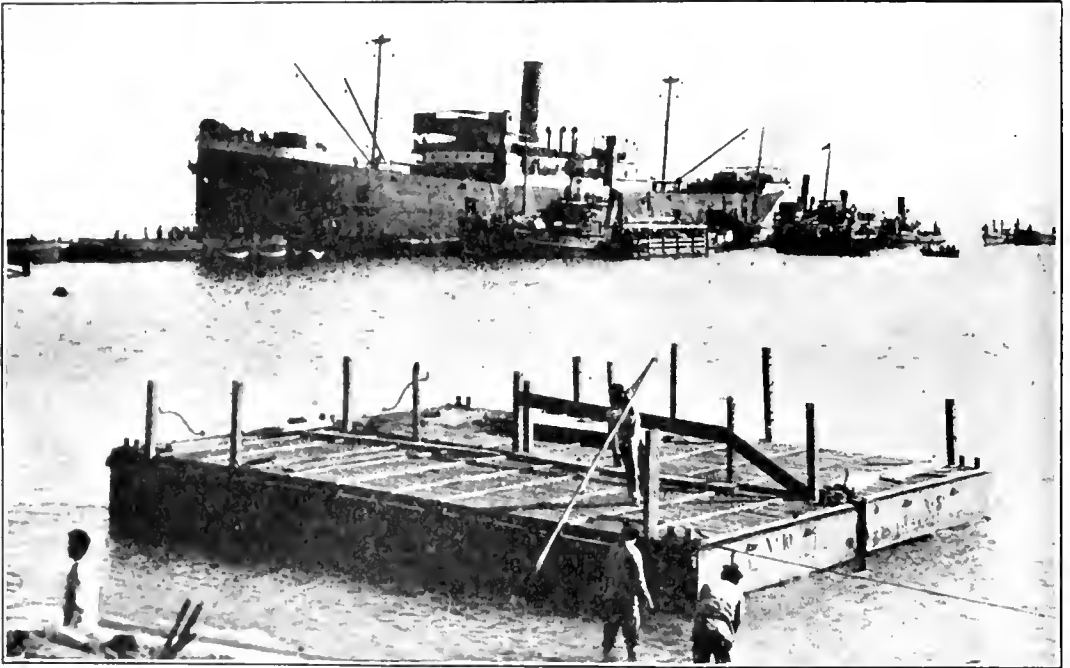
bardment similarly to "W" beach, with the same result—i.e., when the first trip attempted to land they were met with a murderous fire from rifle, pom-pom, and machine gun, which was not opened till the boats had cast off from the steamboats.

A landing on the flanks here was impossible, and practically all the first trip were either killed or wounded, a few managing to find some slight shelter under a bank on the beach; in several boats all were either killed or wounded: one boat entirely disappeared, and in

from the lighter which was in position into the sea and wading ashore. This method proved too costly, the lighter being soon heaped with dead; and the disembarkation was ordered to cease.

The troops in the *River Clyde* were protected from rifle and machine-gun fire, and were in comparative safety.

Commander Unwin, seeing how things were going, left the *River Clyde* and, standing up to his waist in water under a very heavy fire, got the lighters into position.



© Underwood and Underwood.

Unloading an Australian Troop Ship at Gallipoli

The place is V Beach, where the collier *River Clyde*, or the "Ship of Troy," as she was known, disembarked a part of the landing force.

another there were only two survivors. Immediately after the boats had reached the beach the *River Clyde* was run ashore under a heavy fire rather towards the eastern end of the beach, where she could form a convenient breakwater during future landing of stores, etc.

As the *River Clyde* grounded, the lighters which were to form the bridge to the shore were run out ahead of the collier; but unfortunately they failed to reach their proper stations, and a gap was left between two lighters over which it was impossible for men to cross. Some attempted to land by jumping

The bridge to the shore, though now passable, could not be used by the troops, any one appearing on it being instantly shot down, and the men in *River Clyde* remained in her till nightfall.

At 9.50 a. m. *Albion* sent in launch and pin-nace manned by volunteer crews to assist in completing bridge, which did not quite reach beach; these boats, however, could not be got into position until dark owing to heavy fire.

It had already been decided not to continue to disembark on "V" beach, and all other troops intended for this beach were diverted to "W."

The position remained unchanged on "V"

beach throughout the day, men-of-war and the Maxims mounted in *River Clyde* doing their utmost to keep down the fire directed on the men under partial shelter on the beach.

During this period many heroic deeds were performed in rescuing wounded men in the water.

During the night of the 25th-26th the troops in *River Clyde* were able to disembark under cover of darkness and obtain some shelter on the beach and in the village of Sedd-el-Bahr, for possession of which now commenced a most stubborn fight.

The fight continued, supported ably by gun fire from H. M. S. *Albion*, until 1.24 p. m., when our troops had gained a position from which they assaulted Hill 141, which dominated the situation. *Albion* then ceased fire, and the hill, with old fort on top, was most gallantly stormed by the troops, led by Lieutenant-Colonel C. H. H. Doughty-Wylie, General Staff, who fell as the position was won. The taking of this hill effectively cleared the enemy from the neighbourhood of the "V" Beach, which could now be used for the disembarkation of the Allied Armies. The capture of this beach called for a display of the utmost gallantry and perseverance from the officers and men of both services; that they successfully accomplished their task bordered on the miraculous.

OTHER LANDINGS

Landing on the Camber, Sedd-el-Bahr.—One half-company Royal Dublin Fusiliers landed here without opposition, the Camber being "dead ground." The advance from the Camber, however, was only possible on a narrow front, and after several attempts to enter the village of Sedd-el-Bahr this half-company had to withdraw after suffering heavy losses.

Landing at "De Totts" "S" Beach.—The 2nd South Wales Borderers (less one company) and a detachment 2nd London Field Company R.E. were landed in boats, convoyed by *Cornwallis*, and covered by that ship and *Lord Nelson*.

Little opposition was encountered, and the hill was soon in the possession of the South Wales Borderers. The enemy attacked this position on the evening of the 25th and during the 26th; but our troops were firmly established, and with the assistance of the covering ships all attacks were easily beaten off.

Landing at Kum Kale.—The landing here was undertaken by the French.

It was most important to prevent the enemy occupying positions in this neighbourhood,

whence he could bring gun fire to bear on the transports off Cape Helles. It was also hoped that by holding this position it would be possible to deal effectively with the enemy's guns on the Asiatic shore immediately east of Kum Kale, which could fire into Sedd-el-Bahr and De Totts.

The French, after a heavy preliminary bombardment, commenced to land at about 10 a. m., and by the afternoon the whole of their force had been landed at Kum Kale. When they attempted to advance to Yeni Shehr, their immediate objective, they were met by heavy fire from well-concealed trenches, and were held up just south of Kum Kale village.

During the night of the 25th-26th the enemy made several counter-attacks, all of which were easily driven off; during one of these 400 Turks were captured, their retreat being cut off by the fire from the battleships.

On the 26th, when it became apparent that no advance was possible without entailing severe losses and the landing of large reinforcements, the order was given for the French to withdraw and re-embark; which operation was carried out without serious opposition.

ALLIES' COÖPERATION

I now propose to make the following more general remarks on the conduct of the operations.

From the very first the coöperation between Army and Navy was most happy; difficulties which arose were quickly surmounted, and nothing could have exceeded the tactfulness and forethought of Sir Ian Hamilton and his staff.

The loyal support which I received from Contre-Admiral E. P. A. Guépratte simplified the task of landing the Allied Armies simultaneously.

The Russian Fleet was represented by H. I. R. M. S. *Askold*, which ship was attached to the French squadron. Contre-Amiral Guépratte bears testimony to the value of the support he received from Captain Ivanoff, especially during the landing and re-embarkation of the French troops at Kum Kale.

The detailed organization of the landing could not be commenced until the Army Headquarters returned from Egypt on the 10th April. The work to be done was very great, and the naval personnel and material available small.

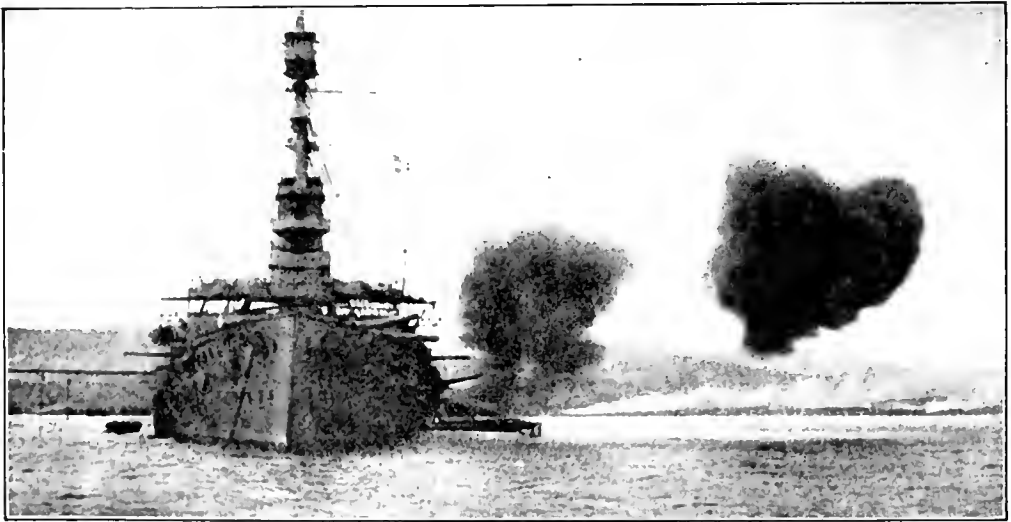
Immediately on the arrival of the Army Staff at Mudros, committees, composed of officers of both services, commenced to work out the details of the landing operations, and it was

due to these officers' indefatigable efforts that the expedition was ready to land on April 22nd. The keenness displayed by the officers and men resulted in a good standard of efficiency, especially in the case of the Australian and New Zealand Corps, who appear to be natural boatmen.

HEROISM OF THE ENTERPRISE

Such actions as the storming of the Sedd-el-Bahr position by the 29th Division must live in history for ever; innumerable deeds of heroism and daring were performed; the gallantry and absolute contempt for death displayed alone made the operations possible.

"At 8 a. m. on February 19, 1915, the first real naval attack on the Dardanelles began with a bombardment, as before, of the forts and batteries at the entrance. At Cape Helles, the extremity of the Gallipoli Peninsula, there were two 9.2 guns, which were known to the Turks as the Ertoghrl Battery. At Sedd-el-Bahr, at the castle, was a fort armed with six 10-inch and two 5.9-inch guns. Between the two main positions a field gun battery had been established to repel a possible landing. On the Asiatic side there were two main batteries. One, near Cape Yeni Shehr, was armed with two 9.2-inch guns, and was named the Orkhanie Battery. The other, at the "New



H.M.S. *Cornwallis* Firing at the Turkish Batteries on Gallipoli Peninsula

At Gaba Tepe the landing and the dash of the Australian Brigade for the cliffs were magnificent; nothing could stop such men. The Australian and New Zealand Army Corps in this, their first battle, set a standard as high as that of any army in history, and one of which their countrymen have every reason to be proud.

A DETAILED DESCRIPTION OF THE SEVERAL BOMBARDMENTS

Supplementing the forgoing general account of the naval operations at the Dardanelles the following description of the three phases of the ill-fated attempt to force the Straits will be of interest. It is condensed from the London *Times'* *History of the War*:

Castle of Asia," near the pier at Kum Kale, was known as the Kum Kale Fort, and contained four 10.2-inch guns. There was also a field battery near the windmills on Cape Yeni Shehr. The bombardment began out of range of the enemy, who therefore made no attempt to reply. It was plainly seen that the Kum Kale and Sedd-el-Bahr Forts were considerably damaged, but the Ertoghrl and Orkhanie batteries were behind open earth-works, and the effect of the bombardment upon them was not easily estimated.

"In the afternoon, at 2.45 p. m., the British battleships *Vengeance*, *Cornwallis*, and *Triumph* and the French battleships *Suffren*, *Gaulois*, and *Bouvet*, steamed in closer and engaged the forts with their secondary armament. The *Inflexible* and the *Agamemnon*, the latter a powerful pre-dreadnought battleship,

supported with a long-range bombardment from their 12-inch guns. By dusk all the enemy batteries were apparently silenced, save one on the Asiatic side, which continued to fire fitfully. No ships of the Allied Fleet were hit, which indicated bad Turkish gunnery at the shorter ranges of the afternoon.

"Next morning the seaplanes and aeroplanes of the Naval Wing made a reconnaissance from the *Ark Royal*, the new mother-ship for naval aircraft, named after Howard's flag-ship in the days of the Spanish Armada. The action was afterwards briefly resumed, but little more could be attempted for a week, owing to unfavorable weather. On February 25th the attack was reopened at long range at 10 a. m. by the *Queen Elizabeth*, *Agamemnon*, *Irresistible* (an old pre-dreadnought battleship), and *Gaulois*. A shell from the Cape Helles Battery soon struck the *Agamemnon*, which was 11,000 yards away, killing 8 men and seriously wounding 5; but within an hour and a half the two 9.2 guns on Cape Helles had been put out of action by the *Queen Elizabeth*, and the *Vengeance* and *Cornwallis*, steaming closer in under the protection of the super-dreadnought's fire, completed the destruction of the position. The *Irresistible* and the *Gaulois* had meanwhile severely hammered the Kum Kale and Orkhanie batteries, which were afterwards pounded by the *Suffren* and the *Charlemagne* at the short range of 2,000 yards. The *Vengeance*, the *Triumph*, and the *Albion* completed the task, and by 5.15 p. m. all the forts had been silenced. The Turkish gunners had been under a terrific fire for seven hours, and their suppression brought them no discredit.

MINE-SWEEPING

"After nightfall mine-sweeping operations were begun under cover of a division of battleships and destroyers. The night was quiet and dark, but the scene was lit by flames from the villages at the entrance, which the Turks had fired. The mine-sweepers were trawlers from the North Sea, under the direction of Captain Johnson, R.N., and the courage with which their task was performed on this and subsequent occasions, generally under heavy fire, won the warmest praise from the whole Fleet. Several of the masters and men were afterwards decorated, and no war honors at the Dardanelles were more fully earned. By the early morning of February 26 the Straits had been swept clear of mines 'up to four miles from the entrance.' The *Albion* and the *Majestic* (battleships), supported by the *Ven-*

geance, thereupon entered the Straits for the first time, steamed to the limit of the swept area, and bombarded the battery of four 5.9-inch guns in Fort Dardanos, as well as some new batteries which had been concealed on the Asiatic side. The enemy's reply was weak. As working parties were noticed on the forts at the outer entrance, these were also successfully shelled from within the Straits. Forces of Marines and Bluejackets were landed at Kum Kale and Sedd-el-Bahr, and completed the work of demolition, except at Fort Kum Kale, where they were interrupted by the enemy.

HIGH HOPES OF SUCCESS

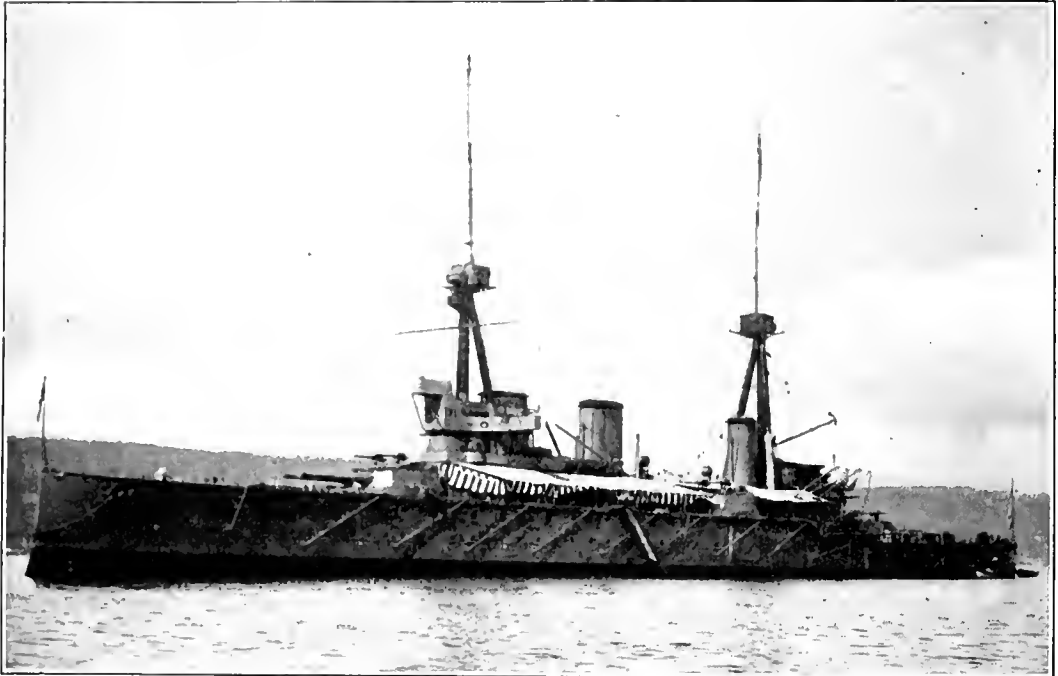
"The success of the opening attacks raised expectations in Great Britain and France to the highest pitch, which the bulletins of the British Admiralty did nothing to diminish. For a time it was seriously thought that the channel to Constantinople would soon be open; but, though the civil population at Constantinople was reported to be much alarmed, the Turkish and German Staffs preserved their confidence. A bitterly cold northeasterly gale again interrupted the operations, but on March 1st the *Triumph*, the *Ocean*, and the *Albion* once more entered the Straits and bombarded Fort Dardanos and the adjacent concealed batteries. That night the mine-sweepers, again covered by destroyers, completed their sweeping for about another five miles, up to within 1½ miles of Kephez Point, near the beginning of the Narrows. On the same day four French battleships entered the Gulf of Saros and heavily bombarded the isthmus of Bulair. On March 2nd the *Canopus*, *Swiftsure*, and *Cornwallis*, taking advantage of the clearance of mines, drew nearer to Fort Dardanos and bombarded it again. The three battleships came for the first time under the fire of the Yildiz or Tekke Battery above the pine woods on the Gallipoli Peninsula, just below the Kilid Bahr plateau. All three ships were hit, but the only casualty was one man slightly wounded. At this period the Russian cruiser *Askold*, which had figured so prominently in the Russo-Japanese War, reached the Dardanelles. Her five long and slender funnels earned for her the name of 'the Packet of Woodbines.'

"The French squadron was again busy in the Gulf of Saros on March 2nd, and wrought great destruction in the lines of Bulair. The *Suffren* bombarded Fort Sultan, on the hill in the center of the isthmus. The *Gaulois* tackled Fort Napoleon, on the western side, and her shells set fire to the barracks, which were

burned down. The *Bouvet* went to the very head of the Gulf, and damaged the bridge over the River Cayack, thus impeding the principal road by which supplies and reinforcements were reaching the peninsula.

"On March 3rd several battleships again ascended the Straits and resumed the bombardment of Fort Dardanos. H.M.S. *Dublin*, a light cruiser, demolished an observation station on the Gallipoli Peninsula, and H.M.S. *Sapphire* (another light cruiser) created a di-

parties had a lively time, for the Turkish soldiery was drifting back to the ruins of the villages on either side of the entrance. A naval officer wrote that 'although we have completely destroyed the three towns of Sedd-el-Bahr, Kum Kale and Yeni Shehr, so that not one intact house stands, yet among the wreckage there is any amount of cover for the Turks.' The enemy, he added, were quite reckless, and dodged about picking off the men of the landing parties. As a matter of fact, a hot and



© Underwood and Underwood.

The British Battleship *Inflexible*

She was struck by Turkish shells during the bombardment at the Dardanelles and was forced to retire.

version by bombarding guns and troops in the Gulf of Adramyti, far away down the coast of Asia Minor. On this day Admiral Carden reported that the field battery near Sedd-el-Bahr Fort had been destroyed, thus bringing the number of guns of all calibers demolished at the entrance to 40.

"On March 4th fine weather greatly assisted the bombardment and the mine-sweeping work within the Straits. On the afternoon of that day demolition parties, covered by detachments of the Marine Brigade of the Royal Naval Division, were landed at Kum Kale and Sedd-el-Bahr 'to continue the clearance of the ground at the entrance to the Straits.' Both

steady rifle fire was maintained, and the Turkish numbers proved to be considerable. The Sedd-el-Bahr party managed to find and destroy four Nordenfeldts, and made good their withdrawal. The party across the Straits, at Kum Kale, were practically driven back to their boats. The casualties among the landing parties were stated to be 19 killed, 25 wounded, and 3 missing, which shows that the reception was warm. Apparently it was on this day that an incident occurred which was afterwards described thus in a letter by a midshipman on the *Ocean*:

"Whilst our Marine covering party was landed at Kum Kale a sergeant was wounded

and left in a safe place under a wall. When they came back he had 14 bullet wounds in him. They searched round until they at last found a German in a wood exactly opposite the sergeant. He was put up against a tree and shot without a word.'

FIRST ATTACK AT THE NARROWS

"On March 5th the preliminary operations were considered complete, and the great attack upon the heart of the defences at the narrows was begun. The bombardment was concentrated upon three of the Turkish batteries. The first was the Rumeli Medjidieh Battery, armed with two 11-inch, four 9.4-inch, and five 3.4-inch guns. The second was the Hamidieh II. Battery, consisting of two of the Krupp 14-inch guns. The third was the Namazieh Battery, containing one 11-inch, one 10.2-inch, eleven 9.4-inch, three 8.2-inch, and three 5.9-inch guns. These three batteries were all established on the seaward side of Kilid Bahr, on the slopes of the peninsula, and close to the actual Narrows. The tremendous Namazieh Battery dominated the very narrowest portion of the Straits. This was the first occasion on which the experiment was tried of bombarding by indirect fire right across the Gallipoli Peninsula. The *Queen Elizabeth*, accompanied by the *Inflexible* and *Prince George*, went into the Gulf of Saros. The great 15-inch guns of 'Lizzie,' as the bluejackets affectionately called the mighty battleship, were said to be capable of 'slicing off a hill-top.' She fired 29 rounds, under the direction of aeroplanes. One of her shells struck the magazine in the Hamidieh battery, which blew up. All three batteries were considerably damaged, but the precise amount of destruction accomplished could not be ascertained. The *Inflexible* and *Prince George*, searched for the hidden howitzers, their fire being directed by wireless from within the Straits by a squadron consisting of the *Irresistible*, the *Canopus*, the *Cornwallis*, and the *Albion*. The Admiralty report stated that, 'although these vessels were much fired at by concealed guns, they were not hit.' On this day the forts on the Asiatic side of the Narrows were not bombarded at all.

"The seaplanes were very busy during this bombardment on March 5. In order to discern the effect of the indirect fire over the peninsula, and to locate concealed positions, they had often to fly very low, and were consequently in great danger. The work was carried out with the utmost daring.

CHANAK FORTS BOMBARDED

"Having bombarded the great batteries at Kilid Bahr, the Allies on March 6 turned their attention to the forts at and near Chanak, on the Asiatic side of the Narrows. The new attack was delivered against Hamidieh I. battery, south of Chanak, and just before the approach to the Narrows, and Hamidieh III., in front of the town of Chanak and on the very edge of the Narrows. The armament of Hamidieh I. was two 14-inch and seven 9.4 guns; Hamidieh III. comprised two 14-inch, one 9.4, one 8.2, and four 5.9 guns. The *Queen Elizabeth* conducted the bombardment from outside the Gallipoli Peninsula, assisted by the *Agamemnon* and the *Ocean*. The range was officially given as 21,000 yards (about 12 miles), but no results were stated, and probably they could not be ascertained. The Turks had profited by their experience on the previous day. They got some field guns and howitzers on the heights of the peninsula, and started shooting at the *Queen Elizabeth*. Their attempt was like firing with pea-shooters at the Matterhorn. Three shells from field-guns struck the huge battleship, but did no damage.

Meanwhile the *Vengeance*, the *Albion*, the *Majestic*, the *Prince George*, and the French battleship *Suffren* had entered the Straits and again engaged Fort Dardanos, as well as the Suandere battery, which was a new gun position near the shore, about equi-distant from Achi Baba and the Kilid Bahr heights. A number of concealed guns replied, and the ships were frequently struck, but there were no casualties. While this action was in progress, Fort Rumeli Medjidieh, near Kilid Bahr and the Narrows, suddenly opened fire. The warships replied with 12-inch shells, and several hits were scored. The episode showed that if Fort Rumeli had been damaged, its guns had not been put out of action by the indirect bombardment over the peninsula the day before. The German newspapers afterwards published reports which suggested that the defenders of the forts were chiefly troubled by the dense fumes from the naval shells. The gunners had at times to abandon their guns for this reason, and so the supposition arose that various forts had been silenced. There was also a Turkish order to economize ammunition in view of the expected grand attack within the Straits.

ANOTHER ATTACK AT THE NARROWS

"Next day, March 7, the Allies tried a change of tactics. The indirect bombardment

was abandoned, and the *Agamemnon* and the *Lord Nelson* steamed into the Straits to engage at long range by direct fire the forts at the Narrows near Kilid Bahr. They bombarded the three forts which had been battered by shells flung over the peninsula on the 5th. The range was from 14,000 to 12,000 yards. The batteries at Fort Rumeli Medjidieh and Hamidieh I. replied for a time, but after explosions within the defences both became silent. The great 14-inch Krupps in Hamidieh

from one fell at the admiral's feet. On this day the cruiser *Dublin* was hit three or four times by the 4-inch guns at Bulair, while she was watching the isthmus.

"On March 8 the stately *Queen Elizabeth* entered the Straits, supported by four other battleships, and shelled at long range the irrepressible guns of Fort Rumeli Medjidieh. The weather was not good, and the British Admiralty issued no report of the action. Thereafter, for some days, the operations lan-



© Underwood and Underwood.

Officers and Crew of the Turkish Cruiser *Hamidieh*

The former German cruiser *Breslau*. She escaped from the British in the Mediterranean and was turned over to the Turks.

II. never replied at all; clearly the explosion in the magazine on the 5th had brought about good results. In this action the two English ships were covered by four French battleships, the *Gaulois*, the *Charlemagne*, the *Bouvet*, and the *Suffren*, which went farther within the Straits and previously engaged Fort Dardanos and various concealed batteries. The *Gaulois*, the *Agamemnon* and the *Lord Nelson* were struck three times each, but in no case was the damage serious, though the *Lord Nelson* had three of her crew slightly wounded. Admiral Guépratte was on the *Suffren*, which penetrated to the extreme limit of the mine field. Several shells struck his ship, and a splinter

guished, although mine sweeping was vigorously pursued.

"It will be gathered that on the whole the attempts at long-range bombardment had not greatly prospered. The majority of the batteries at the Narrows were still effective. Neither indirect nor direct fire from the biggest guns afloat had really put them out of action for any length of time. The high hopes created by the initiation of the naval operations had greatly diminished. Even the destruction of the batteries at Kum Kale and Sedd-el-Bahr, the two points forming the outer entrance, had not achieved the full purpose of the assailants. Turkish troops had crept

forward and entrenched themselves near the ruins, and they had to be shelled once more on March 10 and 11. A special target was the field battery which had been brought to Morto Bay, near the end of the peninsula. It was evident that the Dardanelles would never be forced by long-range fire. It was still more evident that an army was needed to carry through the operation. The hope still cherished by the sailors was that a determined attempt to force their way through at close quarters might produce better results.

"Every night the mine sweepers pushed their way nearer to the Narrows. They were guarded by light cruisers and destroyers, all of which, as well as the trawlers, were constantly under heavy fire and subjected to great danger. The big defending batteries rarely spoke during these nocturnal encounters. The defence against the flotillas was entrusted to smaller guns concealed in special places, and to motor-batteries. On one occasion at least the enemy did grave damage. On the night of March 13 the small light cruiser *Amethyst* was in Sari Siglar Bay, very near the Narrows, when she came under the plunging fire of a concealed battery of howitzers. She was struck several times at close range, was badly knocked about, and suffered over 50 casualties, many being among the engine-room complement. The episode gave rise to ridiculous rumors, and the statement that an unarmored cruiser of only 3,000 tons had passed the Narrows was gravely circulated.

"While the main attack on the Dardanelles was suspended, Vice-Admiral Carden relinquished the command of the Allied Fleet on March 16 owing to ill-health, and his place was taken by Rear-Admiral John M. de Robeck, who was promoted to the rank of Vice-Admiral.

THE LAST PHASE

"On March 17th, 1915, Admiral de Robeck announced his intention of making on the morrow a general naval attack upon the Straits with the whole of the battleships at his disposal. The ultimate responsibility for this decision was not disclosed. It was an attempt to force the Narrows by sea power alone, to repeat the exploit which Admiral Duckworth (in 1807) had only accomplished with great risk against no more formidable missiles than stone cannon-balls. It was a naval adaptation of the onslaught of the Light Brigade. It was the tactics of the cavalry charge applied to battleships and big guns; and when it failed, the leaders of the expedition knew that the

Narrows would never be passed without military aid. It must be remarked that heavy losses had been so far foreseen that the battleships *Queen* and *Implacable* had already been dispatched from England in order, in the words of the Admiralty announcement, 'to replace ships' casualties in anticipation of this operation.' The anticipation proved to be justified.

"The morning of the great adventure (March 18) was bright and clear, and the sea was smooth. At a quarter to eleven the battleships *Queen Elizabeth*, *Inflexible*, *Agamemnon* and *Lord Nelson*, supported by the *Triumph* and *Swiftsure*, entered the first reach of the Straits, which, to an observer on a hillside at Tenedos, looked like a bright blue lake. The four most powerful ships took up a position about $3\frac{1}{2}$ miles within the Straits, roughly between the Gallipoli village of Krithia and the village of Erenkeui, on the Asiatic side. They opened a long-range fire on the principal batteries on both sides of the Narrows. The two smaller warships in support advanced farther in and dealt with the batteries at Fort Dardanos, at Kephez Point, and at Suandere, on the opposite side of the Straits. The howitzers and field batteries concealed on shore responded vigorously. The bombardment was by far the most terrific to which the Narrows had been subjected. The town of Chanak, sadly battered on the 7th, was soon ablaze, and the dense clouds of smoke could be plainly seen by the watchers on distant Tenedos. At 12.22 Rear-Admiral Guépratte led his main squadron, consisting of the *Suffren*, the *Gaulois*, the *Charlemagne*, and the *Bouvet*, past the British ships and engaged the forts at close range, taking up his station near Kephez Point. There were now ten battleships in the Straits, and an hour later all the shore forts had ceased firing. It seemed as though the time had come to press forward the attack. Many thought from the silence of the forts that the day was won.

"A fresh British squadron came steaming into the Straits. It consisted of the *Vengeance*, the *Irresistible*, the *Albion*, the *Ocean*, the *Swiftsure* and the *Majestic*. As the new squadron approached Kephez Point all the other battleships turned to withdraw, save only the *Queen Elizabeth*, the *Inflexible*, the *Agamemnon*, and the *Lord Nelson*, which remained moving slowly to and fro in the first reach.

THE BOUVET SUNK IN THREE MINUTES

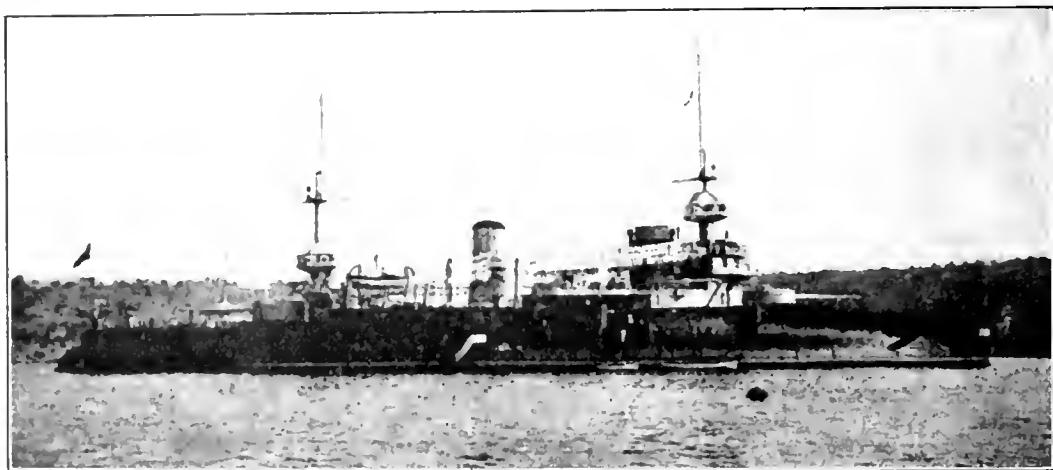
"It was at this moment that tragedy began. The *Bouvet* was taking a course inside Eren-

keui Bay, and out of the main current of the Straits, no doubt to avoid drifting mines. The eddies and cross-currents wrought her undoing, for the supposed course of safety brought her into contact with danger. An officer on a British destroyer saw her struck by three shells, and another officer on the *Prince George* saw two shells strike her on the starboard side; but the real cause of the disaster was almost simultaneous contact with a drifting mine. The explosion is believed to have fired her magazine. In three minutes she had heeled over and disappeared, and the *Charlemagne*, hurrying to the rescue, found only bubbles rising to the surface, and a pall of black smoke slowly lift-

ous work. . . . It was still hoped that the passage might be won.

THE IRRESISTIBLE STRIKES A MINE

"But the Turks had not failed to draw conclusions from the loss of the *Bouvet*. They were dropping more Leon torpedoes into the swift current, and at 4.5 one of these struck the *Irresistible*, a battleship of the *Formidable* class, thirteen years old, with a displacement of 15,000 tons and a principal armament of four 12-inch guns. She quitted the line, listing heavily, and slowly dragged her way towards the entrance to the Straits. She did



The French Battleship *Bouvet*

While bombarding the Turkish batteries, on March 18, 1915, in the Dardanelles, she struck a floating mine and sank in three minutes with a loss of 566 men.

ing. She sank in 36 fathoms at a point north of the village of Erenkeui. The *Bouvet* carried a crew of 630, and of these only 64 were saved.

"The swift disaster to the *Bouvet* was not allowed to check the attack. The new British squadron reached the narrowing portion of the Straits opposite Kephez Point, and resumed the bombardment at 2.36 p.m. It was plain that the forts had not been silenced, for the batteries at Dardanos and Suandere, and one each near Chanak and Kilid Bahr, reopened their fire. Yet much damage had been wrought. A German officer in one of the Hamidieh batteries afterward wrote that the barracks and other buildings were reduced to heaps of ruins, and he acknowledged that one gun was completely destroyed. Under the cover of the British fire the mine-sweepers continued their peril-

ous work. . . . not sink until 5.50 p.m., and meanwhile practically all her crew had been rescued.

"At 6.5 p.m. the *Ocean*, a battleship fifteen years old, with a displacement of 12,950 tons and a principal armament of four 12-inch guns, also sank in deep water, having been struck in similar fashion by a mine. The *Ocean* went to the bottom very quickly, but nearly all the crew were fortunately saved.

"Nor was this the sum of the damage. The *Gaulois* had been badly hit by the Turkish guns, and her bows were torn open. The *Inflexible* was hit in her fore-top by a shell which killed or wounded several men. At a later hour she was also struck by a mine, though this fact was not made public for many weeks. She made her way with great difficulty to Tenedos, and it was feared that she would sink.

"The bombardment died away when darkness

fell, and the squadrons withdrew. The British casualties in *personnel* were only 61 killed, wounded, and missing. The naval authorities had then to consider their position. The great attack had ended with a loss of three battle-ships and with two others practically put out of action. Three days afterwards the British Admiralty issued an official statement which contained the following singular remark: 'The power of the Fleet to dominate the fortresses by superiority of fire seems to be established.' If the supposed power was established in the view of the Admiralty, there were few other people who shared the conviction thus ex-

the enemy were actively preparing to resist a land attack, the imminence of which was no longer a secret. The Russian Black Sea Fleet again appeared off the Bosphorus on March 28 and bombarded the outer forts and batteries. The fire of the Russian ships was directed by sea-planes. The Turkish batteries replied, and a flotilla of Turkish torpedo-boats tried to come out into the Black Sea, but was repelled.

"One night the incredible happened. A little improvised Turkish torpedo-boat of 97 tons, named the *Dhair Hissar*, slipped out of Smyrna and got loose in the Aegean. She carried a



© Underwood and Underwood.

Inside the Turkish Fortress of Sedd-el-Bahr After the Bombardment

pressed. The general conclusion, which was undoubtedly accurate, was that the attack had been badly repulsed. Although the chief losses were caused by mines, the power of well-armed forts over ships had received a further signal demonstration. That this conclusion was eventually forced upon the reluctant British Government was proved by the fact that the naval attack was never afterwards seriously reopened.

"In any case, bad weather set in on March 19, and for some days even sea-plane reconnaissance was impossible. There was meanwhile a great deal of desultory and mostly subsidiary naval work. The positions at the entrance to the Straits were frequently bombarded, in order to deter the Turks from repairing them. There were many signs that

crew of 34, of whom seven were Germans, men from the *Goeben*. For a whole month this tiny craft lurked in odd corners of the coast of Asia Minor and escaped detection. On April 16 she thought her chance had come when she saw a British transport, the *Manitou*, and tried to torpedo her. The attempt failed, but the *Manitou* had lowered boats, two of which capsized, as a result of which 51 men were drowned. One of the boats came to grief through the breaking of a davit, and the other was overturned through overcrowding. The *Manitou* signalled for help, and light cruisers and destroyers swarmed forth in search of the *Dhair Hissar*. She was seen near the Gulf of Smyrna, and instantly chased until she beached herself in the Bay of Kalamuti, on the Island of Chios, on April 18.

"Such is a broad chronicle of the unsupported naval attack upon the Dardanelles. Sir Ian Hamilton, after a hurried visit to Egypt to supervise the fresh loading of the transports, had returned to Lemnos on April 7, bringing with him the remainder of his staff, who had followed from London. The next act of the immense and tragic drama of the Dardanelles began on April 25, when in the still mists of dawn flotillas packed with troops moved silently towards the desolate beaches of the Gallipoli Peninsula."

AFTER THE TROOPS GOT ASHORE

From the time of the landing of April 25th it may truthfully be said that the naval force was used only as an auxiliary to the land forces, although the Navy performed arduous duties in the campaign which followed, coöperating with the Army as opportunity offered. There were a number of minor naval contacts. The German cruiser *Goeben* entered the Straits on the Turkish side from the Sea of Marmora and took part in at least one engagement. By about the middle of May, 1915, Germany had dispatched submarines to the Mediterranean and was suspected of possessing a base in the vicinity of the Anatolian coast. On the night of May 12th, a Turkish torpedo-boat made a

daring and successful attack against the British battleship *Goliath*, which was engaged in protecting the French flank just inside the Straits. The attack resulted in the loss of the *Goliath* with nineteen officers and 500 men. The torpedo-boat succeeded in returning in safety. On May 26th, at about noon, the *Triumph*, while under way at slow speed apparently with nets out and screened by destroyers, was torpedoed by a German submarine and sank in nine minutes. Nearly all the officers and men were saved. The submarine escaped. The next day the *Majestic*, steaming very close to the shore, was sunk in the same fashion, very likely by the same submarine. From this date the larger Allied vessels began to withdraw. The *Queen Elizabeth* rejoined the Grand Fleet, and there remained at the Dardanelles only a few of the older battleships, a number of French and British cruisers, a flotilla of destroyers, and one of the special type shallow-draft monitors originally designed for use along the Flanders coast.

On the Black Sea side there were occasional clashes between the Russian and Turkish forces. In one of these on November 18th, the *Goeben* was somewhat damaged. The strength of the opposing fleets was reported as follows:

RUSSIA'S BLACK SEA FLEET

Warships	Tonnage	Horsepower	Guns	Torpedo Tubes
10 battleships.....	150,522	153,215	336	29
2 cruisers.....	13,350	39,000	60	4
22 destroyers.....	15,500	297,500	58	48
14 torpedo-boats.....	2,082	30,080	30	32
2 torpedo-boat transports.....	6,839	4,137	20	...
11 submarines.....	4,873	13,590	7	30
4 gunboats.....	5,059	5,937	11	...
7 transports.....	28,046	14,872	...	...
1 dispatch boat.....	400	3,300	6	2
2 yachts.....	3,820	7,780	16	...
12 port vessels.....	13,373	7,808	22	5
87 warships.....	243,864	577,219	566	150

THE TURKISH FLEET

1 battle cruiser.....	22,640	70,000	34	4
3 battleships.....	29,320	31,400	94	6
1 coast defense ship.....	2,400	2,200	22	...
2 protected cruisers.....	8,220	34,300	28	4
2 torpedo gunboats.....	1,540	10,200	24	6
9 destroyers.....	3,930	4,500	56	20
15 torpedo-boats.....	1,990	30,000	18	8
33 warships.....	70,040	182,600	276	48

THE GALLIPOLI CAMPAIGN ABANDONED—
CASUALTIES 115,000

On land, in spite of desperate fighting, the Allies made no great headway. There was another landing in August, which was almost as costly as the first—again without tactical results. In September the Allied forces were divided—part staying at the Dardanelles and part moving to Salonika. This was due to the change in the military situation caused by the advance of the Germans against Serbia. A French army which might otherwise have been used at the Dardanelles was directed to Salonika to save the remnants of the Serbian army.

The undertaking at the Dardanelles was finally abandoned in January, 1916, when a creditable withdrawal was effected practically without loss. (See Vol. III.)

In this campaign the Allies lost five British pre-dreadnoughts, one French pre-dreadnought and about 115,000 men killed, wounded or missing, with about 10,000 more sick. The cost of the expedition, ship losses not included, was about \$1,000,000,000. As a diversion to hold an enemy force away from other fields it succeeded; but in the attainment of its main objective, it was a failure, attended by peculiarly damaging political consequences.

The decision to attempt forcing the Dardanelles has been much criticized, and it appears indeed to have been a formidable undertaking. But whether or not it was unwise to attempt it is a debatable question. A successful attack upon the Dardanelles might well have become of the very first importance and produced results which would have quickly been felt in the main eastern and western theaters of the war. Consider for a moment the position of Russia at that time: a vast empire, with millions of men mobilized, crammed with surplus stores of wheat, yet for all practical purposes more cut off from the rest of the world than Germany. The White Sea was ice-bound, and Archangel, which is indifferently served by its railway, would not be open until some time in May. The Baltic was practically sealed. The way to the Black Sea was closed by the Dardanelles and the Bosphorus. Vladivostok was too far away to be of much use. Russia was in bonds, and it was the duty of her allies

to burst them if they could. Immeasurable advantages would follow from the opening of a clear way to Odessa. Ships laden with wheat would stream outward and ships laden with the stores and equipment, which Russia so greatly needs, would stream inward. Moreover, the resources of fighting men, food supplies, and raw materials from Turkey in Asia would be cut off from the Central Powers and any possible menace to India, the Suez, and Egypt removed.

The political results would have been equally great. The effect upon the hesitancy of the Balkan kingdoms and other neutrals would have been instant, and would have counteracted the impression created by the



© Underwood and Underwood.

British Mine-Sweepers of the Dardanelles Expedition

successful German operations against the Russians. The fall of Constantinople would probably further have meant the collapse of the Turkish offensive. The Turks would never survive a blow at their heart. The bombardment of the Dardanelles, therefore, if the Allies had been able to carry it to its logical conclusion, would have had far-reaching effects on the conduct of the war.

AN INTERESTING ANALOGY

It is interesting here to note the analogy between the circumstances influencing the Allies to attempt to force the Dardanelles and the circumstances during our Civil War which influenced the North to open up the Mississippi. In the Civil War it was desired to cut the Confederacy in two so as to shut

off the resources of Arkansas, Texas, and Louisiana from the Confederate armies and at the same time to open up communications between the Gulf and the Northern States via the Mississippi and its tributaries. Moreover, just as forcing the Dardanelles would have been a deterrent to Bulgaria's entering the war on the side of the Central Powers and would perhaps have influenced Greece and Rumania to declare for the Allies, so Farragut's capture of New Orleans deterred France from action hostile to the Union and caused Louis Napoleon to abandon his scheme to dispatch a formidable fleet to the mouth of the Mississippi and join an equal force

cannot help reflecting upon and comparing the circumstances, methods, and results attending these two great enterprises.

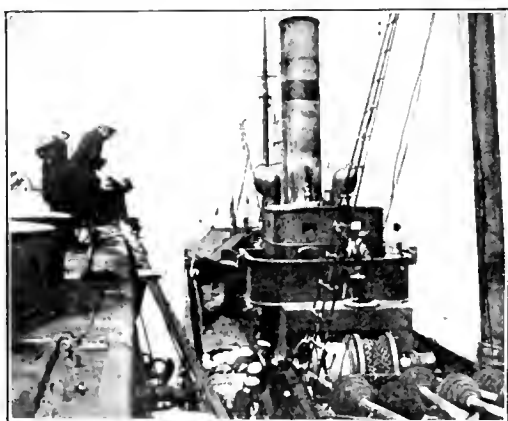
Instead of condemning offhand the attempt to capture Constantinople as foolhardy in conception, it might be better to ponder the possible causes of failure. Failure certainly was never due to lack of fighting qualities in the Allied sailors and soldiers, for there is probably no more heroic page in history than that recording the brave deeds done in this struggle for the Dardanelles.

LESSONS OF THE GALLIPOLI CAMPAIGN

These operations against Turkey are a subject of peculiar interest for professional study. It has been said that more is learned from failures than from successes. If this be true, we have here a prolific source of valuable lessons. Politics seem to have entered and confused military counsel, resulting in lack of concentration and coördination of effort.* There does not appear to have been much coöperation between the French and British in the formation of plans, although in the field a generous and loyal spirit of comradeship prevailed. That French strategists did not take a more active part was perhaps unfortunate because in the Sidi Ferrouj operations of 1830 and again in the Crimea in 1854, the French military genius showed itself peculiarly fitted for drawing plans for such enterprises.

Presumably, during times of peace, the special staffs of Great Britain, France, Italy and Germany, whose function it is to draw war plans, made careful study of the Dardanelles problem. It would be interesting to compare the pre-war studies of Great Britain and France with the method of attack actually used. Many hold the opinion that better results might have been obtained, if, instead of first making a series of naval demonstrations without military support followed by a somewhat dispersed landing and military attack along the difficult coasts of Gallipoli, there had been instituted, at the earliest possible date, a carefully planned and executed concentrated land and sea attack, the Navy forcing passage through the Straits and covering the forts and places of landing, the

* See Vol. II for the official report of the investigation by the British Government of the Dardanelles expedition.



© Underwood and Underwood.

Last Rites for Gallipoli Dead

The bodies of Allied fighters killed in the Dardanelles campaign were lowered to trawlers and were buried in the sea with naval honors.

from England with the object of repudiating the blockade as ineffectual and demanding free egress and ingress for merchantmen.

There is also some analogy between the conditions confronting Admiral Farragut, requiring him to force his way by the Confederate forts in the lower Mississippi on his way to attack New Orleans, and the conditions facing Admiral de Robeck, supposing that his mission was to force the Dardanelles in order to attack Constantinople. Admiral Farragut was brilliantly successful in running the forts and capturing New Orleans, while the Dardanelles operations ended in bitter disappointment to the Allies. It would not be wise to push the analogy too closely, as erroneous inferences might be drawn; but one

Army simultaneously landing out of range of the main forts and then proceeding against a definite objective on either the European or Asiatic side—as an example perhaps landing on the Anatolian coast and advancing on Chanak—so as to support the fleet once through and to secure them a base, thereby cutting off the main Turkish defenses at the entrance to the Straits and at the same time maintaining under the protection of heavy guns the line of communications to the coast.

The purpose of this cursory comment is not to pretend to advance an offhand solution of an intricate military problem, but simply to suggest that it is not safe to infer from the failure of the actual operations that success was impossible, or that it could not have been attained by the expenditure of an equal amount of effort under wiser management.

V

POLITICS PLUS STRATEGY—CAUSE OF THE DISASTER

THE tragic failure of the Dardanelles naval expedition followed by the equally tragic disaster to the combined military and naval attack which came later evoked a storm of indignation in England and let loose a torrent of the hottest criticism of the government then in power. An investigation was ordered, a condensed report of which will be found in Vol. II. It appeared from this violent attack on the Asquith government that there was a political motive behind the expedition in addition to its strategical purpose. This was emphasized by Mr. Asquith himself, then Prime Minister, in a speech in Parliament in 1915, in which he said:

"In the first few months of the war we were still at peace with Turkey; but, owing to causes which are now well known and to which I need not go back, a state of war between ourselves and the Turkish Empire came into existence in the first week of November, 1914. From that moment it was no longer possible, either from a strategic or from a political point of view, to concentrate our entire energies upon the western theater. The Turks threatened our allies, the Russians, in the Caucasus. They threatened, if not directly, remotely and in-

directly, ourselves in Egypt. They were able to close the Black Sea and in consequence of that our source of supply of Russian wheat from the Russian ports. And the advent of Turkey as an ally of Germany and Austria produced a great, and in some respects a lasting, effect upon the attitude of the Balkan States. When that condition of things was brought about the government had to face a question in the Near East which was not merely strategical. I will venture to say here, because it applies to a great many operations, past, present, and future, that in a great war like this you cannot determine your policy or your course of action entirely and exclusively by military and naval considerations.

"From the first moment that a state of war began to exist between Turkey and ourselves, in November of last year (1914), we had to consider, in consultation with our naval and military advisers, what was the best and most politic course for us to take either aggressively or defensively in that part of the globe. In January we had not sufficient military force available, having regard to the requirements of the western theater, for service in the east to do more than provide for the local defense of Egypt against the impending Turkish attack, which was delivered and ultimately defeated on Feb. 2d. The government then had brought under their notice the possibility of a naval attack on the Dardanelles.

"The chances of success, as it seemed to us and to those on the spot, were not only great but preponderant, while the consequences of success, if success had been attained, were almost immeasurable. It would have solved the whole situation in the Balkans. It would have prevented the possibility of that which unhappily now is the realized fact, the adhesion of Bulgaria to our opponents. It would have laid the capital of the Turkish Empire open to menace and possibility to capture, and throughout the whole of the Eastern world it would have been acclaimed as the most brilliant and conclusive demonstration of the superiority of the Allies."

TRYING TO EXPLAIN IT

The world will probably never know who it was in the councils of Great Britain who first said the word "Dardanelles." It will not know because there is reason to suppose that several people whose words carried weight were simultaneously thinking about the Dardanelles, though from entirely different angles. Their views gradually

united and crystallized, and the Dardanelles Expedition was the result. Says the *London Times History of the War*:

"There was, for example, the Foreign Office view, and it was perhaps in the Foreign Office that the Dardanelles first came fully into the picture of the war. The Foreign Office was naturally concerned about the situation in the Balkans. Its avowed desire was to resuscitate the Balkan League, and the idea gained currency that the passage of the Dardanelles would impress the hesitating kingdoms, and do what diplomacy had failed to accomplish. The Balkan kingdoms were quarreling among themselves, but it was thought they all shared in the desire to see the last of the Turk in Europe. The appearance of a Fleet before Constantinople would undoubtedly have caused the hurried flight of the Ottoman Government to Asia Minor; the Balkan States would have almost tumbled over each other in their anxiety to be in at the death; so the alluring argument ran. Given the forcing of the Dardanelles, it was a sound argument, and there is nothing more to be said about it, except that, as things turned out, the Dardanelles Expedition had the worst possible effect upon the attitude of the Balkan kingdoms. The original view was, as has been said, subsequently reinforced by inquiries in Greece, where M. Venizelos, then the head of the Greek Government, tentatively agreed to join in operations against Turkey by supplying a Greek division.

THE RUSSIAN REQUEST FOR AID

"While the Foreign Office was thus examining the Balkan situation, it was stimulated into quickened activity by a request from Russia. In an interview published in the Russian Press in August, 1915, Sir George Buchanan, the British Ambassador at Petrograd, made the following statement:

"When Turkey declared war Russia turned to Great Britain with a request that she would divert a portion of the Turkish troops from the Caucasus by means of a counter-demonstration at some other point. The operations at the Dardanelles were undertaken with a double object—on the one hand, of reducing the pressure of the Turks in the Caucasus, and, on the other, of opening the Straits and so making it possible for Russia to export her grain and receive foreign products of which she stands in need."

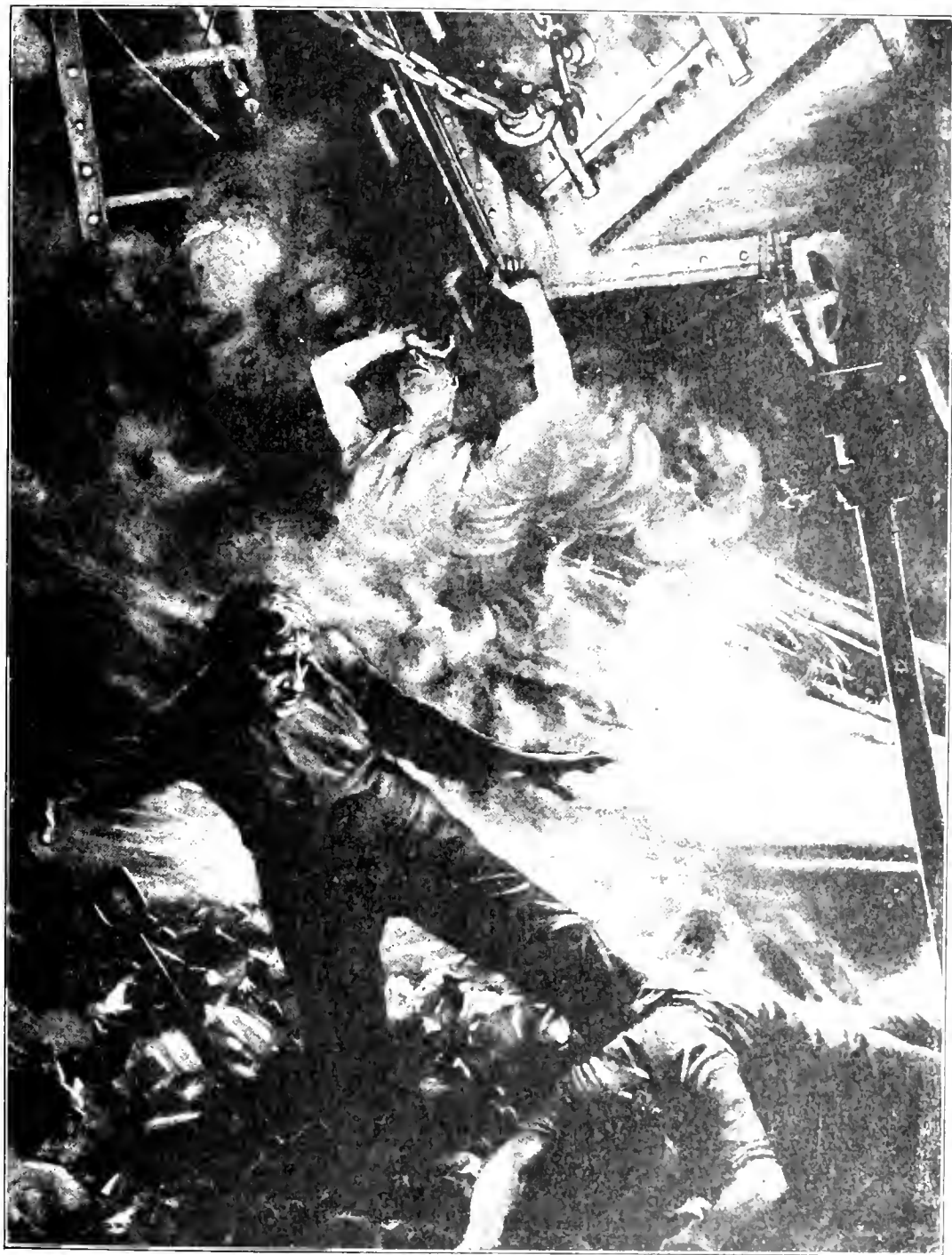
"A request from Russia was, then, the pre-dominating actual cause of the beginning of the

attack on the Dardanelles. The request from Russia was apparently received by the British Foreign Office about the end of 1914. It was at this point that Sir Edward Grey turned to the Admiralty and the War Office. The British Government had already in their possession detailed plans for an attack on the Dardanelles. These plans, which represented a specimen of the elaborate strategical exercises conducted in time of peace by the General Staffs of all countries, were very carefully worked out, and undoubtedly provided for a joint naval and military attack. The plans were ignored in the earlier operations, for reasons which were not made public.

THE NAVAL VIEW

"The British naval view, which must have carried great weight, related chiefly to the feasibility of a naval attack upon the Dardanelles. It was presumed that such naval authorities as were consulted reported that a successful naval attack was possible, because otherwise it would not have been attempted; but it was understood that the probability of heavy losses was not disguised. The naval view was influenced by the fact that the Admiralty had at their disposal a considerable number of well-armed ships which, by reason of their inferior speed and armament, were not fit to lie in the line of battle in a modern fleet action. The French Admiralty were similarly placed; but after several of these older ships had been lost, many naval authorities began to urge that the Allies could not afford to denude themselves too rapidly of their old battleships. There were other uses to which such ships could well be put in waters nearer home.

"Certain other views also affected the decision to attack the Dardanelles. One was that Great Britain was accumulating a powerful force in Egypt, which had repelled with ease an attack on the Suez Canal, and was becoming stale through inaction. The question was asked, 'Why not send it to the Dardanelles?' Again, in some responsible quarters there was a tendency to complain that the British operations on land were incommensurate with the magnitude of the national effort. At the end of 1914 the British forces in France and Flanders were holding rather more than thirty miles of front, and were making no progress. Why not try a diversion elsewhere? asked some speculative strategists. Various points of possible attack were indicated, but the Dardanelles seemed the most accessible of all. It is reasonably certain that this somewhat vague desire to see Great Britain striking a great blow on



Hit in the Stokehold

The illustration deals with a thrilling moment when an enemy torpedo has struck a warship in a vital part below the water line. These men who worked in the bowels of a warship during a naval action took appalling risks. They were the unsung and unknown heroes of the war.

her own account in a theater chosen by herself was at the back of some, at least, of the support which the Dardanelles project received.

A SOUND THEORY—METHODS FAULTY

"If there were any who counseled caution their opinions were either quickly silenced or they were placidly ignored. One or two writers in the press sought to dwell upon the unwisdom of undertaking too many subsidiary operations.



A Submarine Rising to the Surface

They recalled the early dispersed activities of Pitt, who frittered away much strength in minor campaigns all over the world. Their mild protests were in vain. In some cases they passed unheeded, in others they were told that the Dardanelles enterprise was not really subsidiary.

"In a speech made just before he relinquished the office of First Lord of Admiralty, Mr. Churchill discussed the strategic purpose of the Dardanelles Expedition:—

"You must not forget the prize for which you are contending. The army of Sir Ian

Hamilton, the fleet of Admiral de Robeck, are separated only by a few miles from a victory such as this war has not yet seen. When I speak of victory I am not referring to those victories which crowd the daily placards of many newspapers. I am speaking of victory in the sense of a brilliant and formidable fact, shaping the destinies of nations, and shortening the duration of the war. Beyond those few miles of ridge and scrub on which our soldiers, our French comrades, our gallant Australian and New Zealand fellow-subjects are now battling, lie the downfall of a hostile Empire, the destruction of an enemy's fleet and army, the fall of a world-famous capital, and probably the accession of powerful allies. The struggle will be heavy, the risks numerous, the losses cruel; but victory, when it comes, will make amends for all. There never was a great subsidiary operation of war in which a more complete harmony of strategic, political, and economic advantages has combined, or which stood in truer relation to the main decision which is in the central theater. Through the Narrows of the Dardanelles and across the ridges of the Gallipoli peninsula lie some of the shortest paths to a triumphant peace.'

"The statement correctly set forth the theory on which the attack was based, but it bore no resemblance to the faulty and inadequate means employed to carry the theory into effect. The cardinal defect of the whole Dardanelles enterprise was that while everybody was thinking about the end in view, nobody thought sufficiently about the method to be adopted, and the precise strength required.

A NARROW MARGIN ON AMMUNITION

"It must, in addition, be remembered that the Dardanelles attack was decided upon at a period when the British Ministry were collectively unaware of the grave shortage of munitions of war which the country was presently to discover. Both the country and the Cabinet had been soothed by assurances regarding the supplies of shells and guns which were afterwards found to be lacking in substantial foundation. There were periods after the Expedition had landed in the Gallipoli Peninsula when its reserves of gun ammunition reached a distinctly narrow margin. It was further obvious, even to the layman, that the reserves of ammunition available in France would have been much more plentiful had it not been for the constant drain caused by the Dardanelles. A very great amount of ammunition was blazed away on the peninsula in the first weeks after

the landing. Had the Ministry known anything at all definite about the munitions question, its decision to go to the Dardanelles at all might conceivably have been affected, though this must always remain a matter of somewhat doubtful speculation.

"A cognate question of equal importance was that of the supplies of men. The Dardanelles decision was reached at a time when Great Britain had not faced in a careful and scientific fashion the question of the precise number of men required to enable her to join in bringing the war to a successful conclusion. The popular belief, avowedly shared by many Ministers, was that the late spring of 1915 would

would have been reached; but such might possibly have been the case.

MANY INFLUENCES AT WORK

"To sum up, the Dardanelles Expedition was not the plan of any one man, but was the outcome of many contributory influences. It suffered because the requisite element of secrecy was quickly lost, and because the first attack was not made in overwhelming combined military and naval force, which alone would have rendered rapid success possible. It revealed in its earliest stages insufficient thought about the best methods to be pursued. It was begun



© Underwood and Underwood.

The Smoke Screen

This device was used to conceal ships from the German submarine. It was used with good effect by the British in the Dardanelles.

probably see the shattering of the German lines in the West, and the beginning of the downfall of the German Empire. Hand-to-mouth methods of recruiting were still in vogue. Few had any glimmering of the truth, which was that the attainment of victory would probably require the enlistment of every able-bodied man of military age not needed for war industries or the more essential public services.

"The number of men required for land operations at the Dardanelles was, moreover, grievously miscalculated. Neither the Ministry nor the public ever dreamed that the Gallipoli Peninsula would eventually absorb so large and valuable a force. It has been said that the problem of the supplies of men had never been properly investigated when the Expedition was planned. It cannot be said that, if the problem had been duly weighed, any other decision

before Great Britain had taken that careful stock of her supplies of men and munitions which should have been an imperative prelude to a definite decision. The naval operations were marred by preconceived beliefs about the utility of warships in such an attack which proved to be erroneous. The land operations were marred by attacking in insufficient strength and probably at the wrong points. The early months of the operations nevertheless furnished imperishable pages in the story of the British Empire, by reason of the amazing heroism of the soldiers and sailors, who won undying fame among their countrymen and even extorted the reluctant admiration of their foes."

(See Vol III for an account of the combined military and naval expedition which attempted to capture the Turkish positions on the Gallipoli Peninsula, April, 1915.)

The secret of the smoke screens used with such great success by the British navy in the raids on Zeebrugge and Ostend is now revealed. They were produced from chlorosulphonic acid, which has to be burned in the presence of a sufficient amount of water vapor, otherwise the smoke produced, even over the sea, is liable to be somewhat thin on a dry day. The discovery was due to Commander Brock, the fireworks manufacturer.

NAVAL FORCES IN THE PACIFIC AT THE OUTBREAK OF THE WAR

ALLIES

British China Squadron.

Triumph—Battleship (pre-dreadnought).
Minotaur—Cruiser.
Hampshire—Cruiser.
Newcastle—Cruiser.
Yarmouth—Cruiser.

Flotilla of destroyers, river gunboats and small craft.

British East Indian Squadron

Swiftsure—Battleship (pre-dreadnought).
Dartmouth—Cruiser.
Fox—Cruiser.

West Atlantic British Squadron

Suffolk—Cruiser (Flagship of Admiral Caddock until arrival of *Good Hope*).
Good Hope—Armored Cruiser (Sent to relieve *Suffolk*).
Monmouth—Armored Cruiser.
Corwall—Armored Cruiser.
Berwick—Cruiser.
Glasgow—Cruiser.
Bristol—Cruiser.
Canopus—Battleship.
Carnarvon—Armored Cruiser.
Kent—Armored Cruiser.

Australian Navy

Australia—Battle Cruiser (dreadnought).
Sydney—Light Cruiser.

Melbourne—Light Cruiser.
Encounter—Light Cruiser.

Flotilla of 3 destroyers, 2 submarines, gunboats and small craft.

Japanese Navy

2 Dreadnought Battleships.
 13 Pre-dreadnought Battleships.
 2 Dreadnought Battle Cruisers.
 13 Armored Cruisers.
 13 Cruisers.
 52 Destroyers.

GERMANY

German China Squadron.

Scharnhorst—Armored Cruiser (Flagship of Admiral Von Spee).
Gueisenaue—Armored Cruiser.
Emden—Light Cruiser.
Königsberg—Light Cruiser.

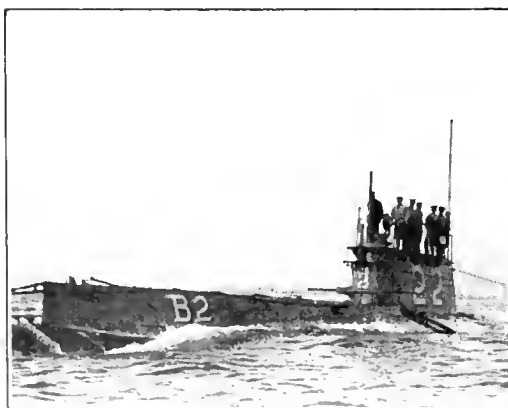
Flotilla of destroyers, river gunboats and small craft.

East Pacific German Detachment

Leipzig—Protected Cruiser.

West Atlantic German Detachment

Dresden—Light Cruiser.
Karlsruhe—Light Cruiser.



© Underwood and Underwood.

The British Submarine B-2

THE GERMAN NAVY IN THE PACIFIC

The Problems Facing Admiral Von Spee When His Squadron Left Their Base at Tsing-tau on August 2, 1914

FROM the tables opposite it appears that Allied naval forces in the Pacific at the outbreak of the war were, in the aggregate, far superior in strength to those of Germany. At first glance it appears rather surprising that these German ships should have succeeded in raiding radio and cable stations, in destroying a considerable number of merchantmen, and in sinking two British armored cruisers in battle before finally being run down and sunk.

The explanation is that the Allied naval forces did not concentrate on the mission to destroy the German ships at large. The German naval base was at Tsing-tau (Kiaochau), from which port the German squadron had put to sea on August 2, 1914, two days before the declaration of war. The British naval forces in the Far East were engaged in convoy duty, in protecting the trade routes and Allied bases, and in expeditions against German island possessions and colonies. The Japanese Navy evidently confined its activities to the Far East in accordance with the terms of the treaty by which they became involved in the war.

The China squadron and East Indian squadron of the British Navy were ill suited in speed to undertake running down the German ships gathered together under the flag of Admiral Graf von Spee. The Australian Navy headed by their dreadnought battle cruiser, however, would have constituted an admirable force for this duty, and the strategy which assigned it other employment may be at least questioned. The German squadron was allowed to proceed east unmolested and unfollowed, while it fell to the lot of the somewhat ill-assorted British squadron in the west Atlantic under the command of Admiral Sir Christopher Cradock to undertake the mission to find and destroy these cruisers. The result was the British disaster off Coronel.

VON SPEE ROAMS THE PACIFIC

The strategy of the German Admiral von Spee is discussed by the British writer, Arthur H. Pollen, as follows:

"When war became imminent Admiral von Spee, as we have seen, left his base for the Polynesian islands. He did this because it was obvious that he could not keep Tsing-tau open in face of the strength that the combined Japanese and British forces could bring to bear against it, and to have been trapped would have been fatal. The same reasons that made him abandon Tsing-tau forbade his trying to keep possession of Rabaul in the Bismarck Archipelago. He faced his future, then, without a base—just as Suffren did in 1781. There were several elements peculiar to the situation that made this possible. In the coast towns of Chile and Peru the Germans had a very large number of commercial houses and agents, and there were German ships in every South American port. Their trade with the islands was considerable and, no doubt long before war, it had been arranged that, on receiving the right warning, a great deal of shipping should be equipped and mobilized to supply the German squadron. The widely scattered German outposts afforded also a service hardly less valuable than coal and food. They constituted an intelligence organization that was indispensable. Having no base, and no source of supply other than these German houses in South America and the islands, it was inevitable that von Spee should look to the east, and not to the west, in any operations that he undertook, if those operations were to be extended and made by a squadron, and not by detached ships. In discussing, then, the strategy which the German Admiralty pursued, these facts must not be lost sight of.

"Of warlike policies he had a choice of two. He might either keep his ships together and embark on a war of squadrons, or he could scatter his ships and devote himself to commerce destruction. In the first case, as we have seen,



© Underwood and Underwood.

Admiral Count von Spee

Commander of the German Far East Squadron. He sank two British ships off Coronel without losing a single man. Five weeks later the British destroyed his fleet off the Falklands. Von Spee and his two sons went down on three different ships.

he could only look for objectives in the east. In the alternative the greatest fields of his operations were either north of the Carolines, where the Chinese trade could be attacked; or northwest, where the Asiatic and Australian trades converge to Colombo; or still farther to the west, where the whole eastern trade runs into the mouth of the Red Sea. To the

—even if only for a time—in his country's favour. The disadvantages of the first policy were that there was the certainty that each ship would ultimately be run down and destroyed by superior force, and grave risk that one or more ships would be paralyzed by want of supplies, before a sufficient destruction of trade could justify the sacrifice. The weakness of



Wire Entanglements Outside the Walls of Tsing-tau

eastward there was no focal point of trade where great results could have been achieved—unless indeed he took his ships round the Horn to attack the River Plate trade or, better still, the main route that passes Pernambuco. It was an obvious truth of the situation that, according as the attack on trade promised great results, so would that attack encounter the greatest dangers, for it seemed to be a certainty that the focal points would be the best protected. The most frequent of these, the approaches to the Red Sea, were also the furthest from his source of supply, and had he in fact resolved upon commerce destruction, his ships would have had to maintain themselves, as did *Emden*, by coal-ing and re-victualing out of the prizes that they took. The advantage of scattering and going for the trade ruthlessly would have been the virtual certainty of inflicting very formidable damage indeed of an economic kind. The advantage of keeping his squadron together was the chance of some *coup* that would turn the scale

the second was that, as a squadron, his ships might accomplish nothing at all.

GERMAN SHIPS KEPT TOGETHER

"I have so far discussed the German Admiral's alternatives as if they had been debated at the time when war became certain. But it can be taken for granted that the principles on which he acted were not solely his own, but had determined Germany policy in this matter long before. And, in the main, the decisive arguments probably arose from the character of his force.

"Von Spee actually did, then, what it was fully anticipated he would do. He kept his ships together and traveled slowly eastward, maintaining himself in absolute secrecy from the outbreak of war until November 1. What were his exact hopes in the policy pursued, and what the consideration that led him to adopt it? His hopes of achieving any definite strate-

gic result can only have been slender. The composition of his force was so well known that he could hardly have supposed it possible that he would ever meet a squadron of inferior strength. He cannot, then, primarily have contemplated the possibility of any sort of naval victory. Failing this, he may have had various not very precisely defined ideas in his mind. There was, to begin with, the possibility of picking up a sufficient number of German reservists off the South American coast to have made it possible, not only to attack and seize the Falkland Islands, but actually to have occupied them by an extemporized military force. This, as we know, he did attempt. He might further have contemplated crossing the South Atlantic to the Cape, with a view to supporting an insurrection of the Boers, if that materialized, or in any event of backing up the German colonists, who would be open to attack. Or, having struck a blow at the Falkland Islands, he might have sent his ships on a final mission in raiding the Atlantic trade. So long as his squadron was afloat, there were many possibilities—and always a certainty that it would force counter concentration on his opponents and thereby embarrass them in the task of searching for him.

"But one thing was certain. He could not combine squadron war with commercial war. *Emden** he detached in August to attack the trade in the Indian Ocean. But the only support he could lend her was such immunity from pursuit as would result from the concentration he forced upon the British forces. It is highly probable that, had he sent all his ships on the same mission, he would have had at least a month's run before effective measures could be taken, if only for the fact, possibly unknown to him, that so large a part of the Allied forces were being devoted to convoying the Australian troops."

After the German squadron sailed from Tsing-tau in early August, nothing was heard from them for some weeks, except in the case of the *Emden*, which quickly settled down to the business of destroying enemy merchantmen along the China coast on the Indian ocean. Says the *London Times History of the War*:

"The German squadron had eluded the Japanese squadrons in the Far East, the *Scharnhorst* and the *Gueisena* having left Kiaochau just before war broke out. They were

* The career of the light cruiser *Emden* is covered in great detail in a later chapter of this volume.

not heard of again until September 22d, when they arrived off Papeete in the island of Tahiti, where they sank a small and unarmed French gunboat and bombarded the defenseless town. Later on it was discovered that the two vessels had visited Apia harbor on September 14, but had remained only a short time. In October the *Leipzig* sank a steamer called the *Bankfields* off Peru, homeward bound from Eten with a cargo of six thousand tons of sugar. In September she sank the oil-tank steamer *Elsinore*, and in November the *Tine Branch*, off the Chilean Coast, while that vessel was outward bound from England to Guayaquil. The *Dresden* sank the *Hyades* off Pernambuco on August 16, while the vessel was bound from the River Plate for Holland with grain, and the *Holmwood* on August 26 near Santa Maria, on the voyage from South Wales to Bahia Blanca with coal. The *Nürnberg* cut the cable between Bamfield, British Columbia, and Fanning Island early in September, but there is no record of her having captured anything. The large cruisers do not seem to have gone in for commerce destruction."

ATTACKS ON CABLE AND RADIO STATIONS

Means of transmitting information are most important factors in modern strategy. These are now so efficient that it is extremely difficult for commerce destroyers of the nation of weaker sea power to escape the net drawn about them by the stronger navies dominating the seas. That the German ships on foreign stations well realized the part wireless and cable would play in their final downfall is evidenced by some interesting attempts made by them to destroy wireless stations and cable stations.

An instance of this was the visit of the *Nürnberg* and a German collier to the British cable station at Fanning Island, situated about four hundred miles south of the Hawaiian group in the mid-Pacific. It was in the morning of September 7, 1914, that the German cruiser rudely intruded upon the usually quiet and uneventful life of Fanning.

The cable employees were hard at their work, when they were paralyzed to see a German officer at the door of the operating room with a revolver. "Take your hands off those keys, all of you!" he commanded. The men were made to line up against the wall, while the sailors with axes smashed the delicate and costly instruments. Heavy

charges of dynamite were planted and the cable was blown to atoms. Meanwhile the collier grappled for the cable further out to sea, with the intention of doing additional damage. A search was then made by the officers, and a number of papers were found which revealed that several valuable instruments were buried in reserve for just such contingencies, and that a quantity of hidden arms and ammunition existed, all of which were quickly uncovered and confiscated.

Later on the *Nürnberg* formed a part of Admiral von Spee's squadron, which after the victory off Coronel attempted to raid the Falkland Islands, just as Fanning had been raided. But this time the British Navy surprised the enemy, and instead of a defenseless wireless station the Germans found Vice Admiral Sturdee on guard with a battle cruiser division.

Another instance of cable attack, also unhappy in its results for the raiders, occurred at the Cocos Islands. The valiant Captain von Müller of the *Emden* attempted one of his bogus-funnel ruses as a means of taking by storm the cable and wireless station on Keeling-Cocos Islands. But the ruse was detected—and well ahead—by those in charge on shore, who promptly advised by wireless several British men-of-war within call. This led to the *Emden's* ultimate doom, after a voyage full of adventure, a detailed account of which will be found later in this volume.

The superior sea power of the Allies, however, made German attempts on Allied wireless and cable stations difficult, and, when successful, of only temporary embarrassment, while the overseas German stations, without ships to defend them, passed permanently into the hands of the Allies.

BRITISH OPERATIONS IN WEST ATLANTIC—AUGUST, 1914

IN the early days of August, 1914, the British, while von Spee's ships were at large in the Pacific, conducted sweeping operations in the west Atlantic and finally Admiral Cradock with a squadron of one old battleship, two armored cruisers, one light cruiser, and an armed merchantman proceeded through the Straits of Magellan into the

Pacific. These early movements are described in *Tales of the Great War*, by Sir Henry Newbolt, as follows:

"On August 2, Admiral Cradock was in Kingston harbor, Jamaica, flying his flag in the *Suffolk*, a cruiser of 9,800 tons. She was bigger than anything the Germans then had in the Atlantic, but not so big as some of their China Fleet, and the Admiralty ordered out the *Good Hope*, a cruiser of 14,100 tons with 9.2 guns, then off the coast of Ireland. The *Good Hope* at once crossed the Atlantic, sweeping the trade route as she went. The *Suffolk* sailed north from Jamaica to meet her, and on her way, in the evening of August 6, she fell in with a German light cruiser, the *Karlsruhe*, of 4,820 tons. The *Karlsruhe* made off, but the Admiral signaled by wireless to the *Bristol*, a 4,800-ton light cruiser out on his right, to engage her, and soon had the pleasure of hearing that the *Bristol* was at it hammer and tongs. It was almost dark by the time the fight began;



Admiral Sir Christopher Cradock

Commander of the British Squadron in the naval battle off Coronel, November 1, 1914.

but the *Bristol* kept it up well for just an hour, and was hoping to hold the enemy till the *Suffolk* could cut her off. Admiral Cradock signaled 'Stick to it, I am coming,' but at 9.10 the *Suffolk* had the disappointment of seeing the *Karlsruhe* using her superior speed to draw away out of action. She was probably wise in doing so, for she had not succeeded in once hitting the *Bristol*, and she must have known that there were other English cruisers in those parts. In fact she boasted that she had been attacked by four at once, which was untrue. Admiral Cradock then ordered the *Bristol* to St. Lucia and went on north in the *Suffolk* until he met the *Good Hope* at sea. He went on board her at once, hoisted his flag, and turned south again. On August 23d he touched at St. Lucia, and found the *Bristol* at the rendezvous. On the 25th the two ships sailed, to show the flag among the islands, and they rendezvoused again at Port of Spain, where

they were joined by the *Berwick*. On the 28th all three ships went south together, the Admiral in the center with the *Bristol* to starboard and the *Berwick* to port. The distance between each was forty miles, so that they were sweeping the whole coast of South America on a line about one hundred miles broad. The *Bristol*, having the inshore station, had to search the harbors; in the Amazon she met the *Cornwall*, and off Montevideo she passed the *Glasgow*, who was on her way to join the flagship. She herself was then ordered north again. The Admiral passed on southwards, and was joined first by the *Monmouth*, then by the *Glasgow*, and finally by the *Otranto*, an auxiliary cruiser—that is, an armed liner. With these three ships and the *Good Hope* he steered for the Straits of Magellan in search of three German cruisers, the *Leipzig*, *Dresden* and *Nürnberg*, who were reported to have concentrated in this direction."

THE BATTLE OF CORONEL

The British Fleet Under Admiral Cradock Outmaneuvered and Outgunned by the Germans—*Good Hope* and *Monmouth* Sunk

I

COMPARISON OF FORCES

A COMPARISON of the strategic dispositions of the belligerents in this rather remote theater of war, in the latter part of October, 1914, shows that the British Admiral had under his command two armored cruisers, one light cruiser, and one battleship, while the German Admiral, Count von Spee, had two armored cruisers and three light cruisers, thus giving the British a superiority of about 8,000 tons in displacement and about 2,200 pounds in weight of broadside. These figures, however, are misleading, because they do not truly measure the fighting values of the two groups. The German ships were newer and their squadron more homogeneous

in both guns and speed. The British ships were a heterogeneous collection of less modern vessels, with the principal fighting strength in the *Canopus*,* an old battleship of only sixteen knots speed, which did not get into the engagement at all. With her out of the battle line, the Germans had considerable advantage in tonnage and in weight of broadside. It is also to be remembered that the *Cornwall*, *Berwick*, and *Bristol* were in South American waters,† and had all the British ships been held together they would have constituted a formidable squadron in gun power though unsatisfactory as to speed.

Good Hope.—Armored cruiser of 14,100 tons. Built at Govan and launched in 1901. Length 515 ft.; beam, 71 ft.; draught of water, 28 ft. Her armament consisted of two 9.2-inch guns, sixteen 6-inch, twelve 12-pounders, three 3-pounders, two machine guns, and she was also

* *Canopus*, battleship of 12,050 tons, built at Portsmouth, and completed in 1900. Length 400 ft.; beam, 74 ft.; draught of water, 26½ ft. Her armament consisted of four 12-inch guns (mark 8, 35 caliber, weight of projectile 850 pounds), twelve 6-inch, ten 12-pounders

(12 cwt.), two 12-pounders (8-cwt.), six 3-pounders, two Maxims, four torpedo tubes. Speed (when new) 23.5 knots.

† Although their exact location is not known it would appear that the *Carnarvon* and *Kent* were also in Atlantic waters at this time.

fitted with two torpedo tubes. The 9.2 gun throws a shell of 380 pounds weight, the 6-inch one of 100 pounds weight. The *Good Hope* represented one of the worst and most expensive types of ship ever built for the British Navy in modern times. She was an immense target and much under-gunned for her displacement. Speed 24 knots.

Monmouth.—Armored cruiser of 9,800 tons. Built in Glasgow and completed in 1903. Length, 440 ft.; beam, 66 ft.; draught of water, 24½ ft. Her armament consisted of fourteen 6-inch guns, eight 12-pounders, three 3-pounders, eight machine guns, and two torpedo tubes. Her best speed was 23.9 knots.

Glasgow.—Light cruiser of 4,800 tons. Built by Fairfield and completed January, 1911. Length, 430 ft.; beam, 47 ft.; draught of water, 15¼ ft. Her armament consisted of two 6-inch guns, ten 4-inch, four 3-pounders, and two and four torpedo tubes. Speed 23.5 knots.

Otranto.—Of the Orient Line. Twin-screw steamer of 12,100 tons, launched from Workman & Clark's yard at Belfast in 1909. Commissioned August, 1914, as an auxiliary cruiser.

The German armored cruisers *Scharnhorst* and *Gneisenau*, of 11,600 tons, were sister ships, and were completed in 1907. Their length was 449¾ ft.; beam, 71 ft.; draught of water, 25 ft. Their armament consisted of eight 8.2-inch guns (weight of projectile 275 pounds), six 6-inch, twenty 24-pounders, four machine guns, and four torpedo tubes. Speed 23.5 knots.

Dresden.—Third-class cruiser, 3,600 tons. Sister ship to the *Emden*. Completed 1909. Length, 387 ft.; beam, 43½ ft.; draught of water, 17¾ ft. She was armed with ten 4.1-inch guns, eight 5-pounders, four machine guns, and two torpedo tubes. Speed 24 knots.

Nürnberg.—Same type and armament as *Dresden*, but 3,450 tons displacement. Speed 24 knots.

Leipzig.—Third-class cruiser, 3,250 tons. Completed 1906. Length, 341 ft.; beam, 43½ ft.; maximum draught, 17½ ft. She was armed with ten 4.1-inch guns, ten 1-pounders, four machine guns, and two torpedo tubes. Speed 23 knots.

The comparison of guns in the two squadrons runs thus:

German.	British.
16 8.2-inch	2 9.2-inch
12 6-inch	32 6-inch
30 4.1-inch	10 4-inch
40 24-pounders	20 12-pounders
16 5-pounders	10 3-pounders
10 1-pounders	

The British ships were outclassed, as their 6-inch guns of an old make were unlikely to inflict damage on the enemy at long ranges, no matter how well served; while at the same time the comparatively modern 8.2's of the Germans would be finding their target, the gunners being unhampered by the disturbing factor of hits on their own ships. The *Scharnhorst*, as a matter of fact, had won the gold medal for big-ship shooting presented by the

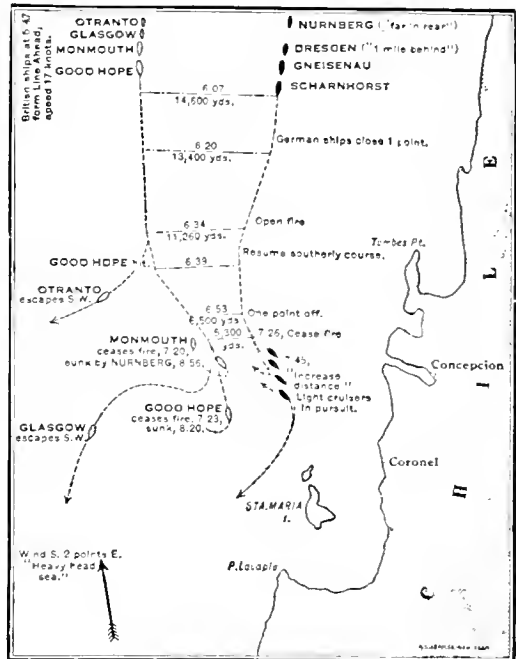


Diagram of the Battle of Coronel, off Chile, November 1, 1914

Kaiser, and the gunners of the *Gneisenau* were also known to be extremely efficient in gunnery.

The information now available seems to afford evidence of superior strategy on the part of Germany. The British forces though superior in the aggregate were so scattered as to permit the German squadron to engage and destroy a detachment of inferior strength. The time-worn military principle of "concentration to attain local superiority of strength at point of contact with the enemy" was thus given patent illustration in these operations.

II

BRITISH ADMIRAL ATTACKS
UNDER DISADVANTAGE

ON the afternoon of November 1, 1914, the British squadron was spread out in scouting formation, steaming along the coast of Chile, looking for enemy ships. The light cruiser *Glasgow* had been dispatched to Coronal to send cables. She left there at 9 a. m., November 1, and while steaming to the northward sighted the German squadron about 4 p. m. At about 5 p. m. the British ships formed in line ahead, the *Good Hope* leading, followed by the *Monmouth*, *Glasgow*, and *Otranto*. The battleship *Canopus* was about 250 miles to the southward. Admiral von Spee formed his ships in line ahead, the *Scharnhorst* leading, followed by the *Gneisenau*, with the *Dresden* about one mile in the rear and the *Nürnberg* far behind. At 6.07 p. m. the two squadrons were on nearly parallel southerly courses, about 15,000 yards apart, with the German line inshore.

There was a heavy sea and strong wind from one to two points to the eastward of south, and the German ships were able to make their course a little to the westward of south, bringing this heavy sea on their unengaged bow. On the other hand, the British carried wind and sea a little on the engaged bow, a marked disadvantage, making their six-inch guns, especially the lower tier, practically useless. It is to be noted that the German 8.2-inch guns were mounted higher and were better for fighting in a seaway. Practically all that the British had to oppose the sixteen 8.2-inch guns of the Germans were two old 9.2-inch turret guns on board the *Good Hope*, and the few 6-inch guns mounted above the gun deck. An additional disadvantage was that the British ships soon after the battle began were outlined against the western sky, supplying an excellent point of aim for the Germans.

At this time Admiral Cradock was no doubt doing some hard thinking. Should he engage with such big odds against him? There was the *Canopus*, his main fighting strength, 250 miles to the southward. By bearing off sharply to the westward, even at this late hour, the speeds of the two squad-

rons were so nearly equal that he could have avoided engaging that night, and by morning he might have joined the *Canopus* and fought the battle on a more equal footing. It would be interesting to know what thoughts flashed through the Admiral's mind and what counsels prevailed upon him to make the courageous but fateful decision embodied in his signal to the *Canopus* at 6.18 p. m., "I am going to attack the enemy now."

ADMIRAL VON SPEE'S REPORT

The two squadrons gradually neared one another on converging courses, and Vice Admiral von Spee describes the resulting battle as follows:

Wind and swell were head on and the vessels had heavy going, especially the small cruisers on both sides. Observation and distance estimation were under a severe handicap because of the seas which washed over the bridges. The swell was so great that it obscured the aim of the gunners at the six-inch guns on the middle deck, who could not see the sterns of the enemy ships at all and the bows but seldom. At 6.20 p. m., at a distance of 13,400 yards, I turned one point toward the enemy, and at 6.34 opened fire at a distance of 11,200 yards. The guns of both our armored cruisers were effective, and by 6.39 already we could note the first hit on the *Good Hope*. I at once resumed a parallel course instead of bearing slightly toward the enemy.

The English opened their fire at this time. I assume that the heavy sea made more trouble for them than it did for us. Their two armored cruisers remained covered by our fire, while they, so far as could be determined, hit the *Scharnhorst* but twice and the *Gneisenau* only four times.

At 6.53, when 6,500 yards apart, I ordered a course one point away from the enemy. They were firing more slowly at this time, while we were able to count numerous hits. We could see, among other things, that the top of the *Monmouth's* forward turret had been shot away and that a violent fire was burning in the turret. The *Scharnhorst*, it is thought, hit the *Good Hope* about thirty-five times.

In spite of our altered course the English changed theirs sufficiently so that the distance between us shrunk to 5,300 yards. There was reason to suspect that the enemy despaired of using his artillery effectively and was maneuvering for a torpedo attack. The position of the

moon, which had risen at 6 o'clock, was favorable to this move. Accordingly, I gradually opened up further distances between the squadrons by another deflection of the leading ship at 7.45. In the meantime it had grown dark. The range finders on the *Scharnhorst* used the fire on the *Monmouth* as a guide for a time, though eventually all range finding, aiming, and observations became so inexact that firing was stopped at 7.26.

At 7.23 a column of fire from an explosion was noticed between the stacks of the *Good Hope*. The *Monmouth* apparently stopped firing at 7.20. The small cruisers, including the *Nürnberg*, received by wireless at 7.30 the order to follow the enemy and to attack his ships with torpedoes. Vision was somewhat obscured at this time by a rain squall. The light cruisers were not able to find the *Good Hope*, but the *Nürnberg* encountered the *Monmouth*, and at 8.58 was able by shots at closest range to capsize her without a single shot being fired in return. Rescue work in the heavy sea was not to be thought of, especially as the *Nürnberg* immediately afterward believed she had sighted the smoke of another ship and had to prepare for a new attack.

The small cruisers had neither losses nor damage in the battle. On the *Gneisenau* there were two men slightly wounded. The crews of the ships went into the fight with enthusiasm, every one did his duty and played his part in the victory.

III

THE BATTLE AS SEEN FROM THE GLASGOW

THE following report was made by Captain John Luce, of H.M.S. *Glasgow*:

Glasgow left Coronel 9 a. m. on November 1 to rejoin *Good Hope* (flagship), *Monmouth* and *Otranto* at rendezvous. At 2 p. m. flagship signaled that apparently from wireless calls there was an enemy ship to northward. Orders were given for squadron to spread N.E. by E. in the following order: *Good Hope*, *Monmouth*, *Otranto*, and *Glasgow*, speed to be worked up to 15 knots. 4.20 p. m., saw smoke; proved to be enemy ships, one small cruiser and two armored cruisers. *Glasgow* reported to Admiral, ships in sight were warned, and all concentrated on *Good Hope*. At 5.0 p. m. *Good Hope* was sighted.

"I AM GOING TO ATTACK ENEMY NOW"

5.47 p. m., squadron formed in line-ahead in following order: *Good Hope*, *Monmouth*, *Glasgow*, *Otranto*. Enemy, who had turned south, were now in single line-ahead 12 miles off, *Scharnhorst* and *Gneisenau* leading. 6.18 p. m., speed ordered to 17 knots, and flagship signaled *Canopus*, "I am going to attack enemy now." Enemy were now 15,000 yards away, and maintained this range, at the same time jamming wireless signals.

By this time sun was setting immediately behind us from enemy position, and while it remained above horizon we had advantage in light, but range too great. 6.55 p. m., sun set, and visibility conditions altered, our ships being silhouetted against afterglow, and failing light made enemy difficult to see.

7.3 p. m., enemy opened fire 12,000 yards, followed in quick succession by *Good Hope*, *Monmouth*, *Glasgow*. Two squadrons were now converging, and each ship engaged opposite number in the line. Growing darkness and heavy spray of head sea made firing difficult, particularly for main deck guns of *Good Hope* and *Monmouth*. Enemy firing salvos got range quickly, and their third salvo caused fire to break out on fore part of both ships, which were constantly on fire till 7.45 p. m. 7.50 p. m., immense explosion occurred on *Good Hope* amidships, flames reaching 200 ft. high. Total destruction must have followed. It was now quite dark.

Both sides continued firing at flashes of opposing guns. *Monmouth* was badly down by the bow, and turned away to get stern to sea, signaling to *Glasgow* to that effect. 8.30 p. m., *Glasgow* signaled to *Monmouth*: "Enemy following us," but received no reply. Under rising moon enemy's ships were now seen approaching, and as *Glasgow* could render *Monmouth* no assistance, she proceeded at full speed to avoid destruction. 8.50 p. m., lost sight of enemy. 9.20 p. m., observed 75 flashes of fire, which was no doubt final attack on *Monmouth*.

Nothing could have been more admirable than conduct of officers and men throughout. Though it was most trying to receive great volume of fire without chance of returning it adequately, all kept perfectly cool, there was no wild firing, and discipline was the same as at battle practice. When target ceased to be visible, gunlayers spontaneously ceased fire. The serious reverse sustained has entirely failed to impair the spirit of officers and ship's company, and it is our unanimous wish to meet the enemy again as soon as possible.

The *Glasgow* was engaged chiefly with the *Nürnberg* and *Dresden* and it is reported that about 600 shells were fired at her only five of which made hits, all near the water line. Three of these were stopped by coal, a fourth wrecked the Captain's pantry and cabin, and a fifth penetrated below decks but luckily did not explode. The *Glasgow* finally withdrew, headed WNW until clear and then changed

is difficult to find any fault in the tactics used by Vice Admiral von Spee. He appears to have maneuvered so as to secure the advantage of light, wind, and sea. He also suited himself as regards the range. The *Good Hope* and *Monmouth* were destroyed, the *Glasgow* had a narrow and lucky escape, while the German losses were two slightly wounded.



Vice Admiral Ingenohl
Commander-in-Chief, German High Sea Fleet.

course to the south, meeting the *Canopus* and returning in her company to the Falklands.

The *Otranto* was also under the fire of the enemy light cruisers but was not damaged. The first salvo is said to have fallen ahead of her; the second, over; the third short; the fourth and fifth over; the sixth astern; and the seventh short. By this time she had succeeded in hauling out of range and made good her withdrawal in the direction of the Straits.

In concluding the account of this battle it

IV

WAS CRADOCK RASH? SHOULD HE HAVE RUN AWAY?

WHY did Admiral Cradock decide to fight von Spee off Coronel late in the afternoon of Nov. 2, 1914? He knew his fighting force was much inferior to that of the German admiral, and it would have been easy for him to evade the enemy during the night and bring off the action next day, with the powerful *Canopus* added to his force, under conditions more nearly equal. Was he merely reckless, did he lose his head, or was he living up to the British tradition of attacking the enemy under whatever conditions and whenever found? Says Sir Henry Newbolt, in his *Tales of the Great War*:

"There are many mysteries in war. Some are only mysteries so long as the war lasts—concealments kept up for a time on the chance of misleading or embarrassing the enemy. Then there are certain inventions and methods which must remain secret even after peace is made, because they may some day be wanted again. But these, like the first, are only mysteries by intention—in each case there are those who know but cannot tell. The third kind of mystery is the most interesting one, the secret which we long to know, but which can never be explained because it is no longer possible to question those who alone could give the answer. Such cases are much commoner in time of war than in peace; in war it often happens that a man's time comes before he can say what is in his mind, and every now and then it happens that the man who dies suddenly in this way is a man whose last thoughts we would give a great deal to know.

"There are some famous cases of this kind. If Nelson had come back alive from Trafalgar, we should not have had to wait more than a hundred years for the historians to settle how

he meant to fight the battle and how he actually did fight it. In the Crimean War there was a mystery about the charge of the Light Brigade. It was a mistake—we know that 'someone had blundered,' but we shall never know for certain how the mistake arose, because we cannot have the evidence of Captain Nolan, who brought the order. A shell killed him instantly as he rode out in front of the Brigade at the very start. It is thought that he was trying to put them right at the moment when he fell.

ONE OF THE WAR'S MYSTERIES

"On November 1, Rear-Admiral Sir Christopher Cradock, in command of three cruisers and one armed liner, fell in with a German squadron of five cruisers much more powerfully armed than his own. A battleship of an older and slower type, with heavier guns, was on the way to reinforce him; but he attacked at once under every disadvantage. In ten minutes one of his ships was fatally on fire; another, being unarmored, soon had to leave the line, and in an

hour and a half his flagship sank under him. Not a man of her company of nine hundred was saved.

"Here was one of the mysteries of war; and since the Admiral himself was gone, who was to solve it? Who was to tell why he decided to fight under such conditions, what he hoped or expected when he went into action, and what he felt when he saw his squadron crushed by the enemy's fire? Those who undertook to answer these questions in public were divided. Some were of opinion that the action was a fatal blunder, that Cradock was a rash commander who had a better judgment for diplomacy than for war, and made the mistake of despising his enemy. Others declared that he was a worthy successor to Sir Richard Grenville of the *Revenge*, who tackled fifty-three ships with only one, just to show the Spaniards that an English seaman was not afraid of any odds. On this principle, according to one well-known writer, Cradock really won an important victory, though he lost his only two powerful ships and did little or no harm to the enemy."

BATTLE OF THE FALKLANDS

Superior Gun Power and Speed Enabled Admiral Sturdee to Sink Four German Cruisers After a Brisk Running Fight

I

VON SPEE'S CARELESS STRATEGY

AFTER the battle off Coronel, while the German squadron coaled at Valparaiso and made its way in no great hurry around Cape Horn, the British were not idle. Within ten days of the receipt of the news of the British disaster in the South Pacific the dreadnought battle cruisers *Invincible* and *Inflexible*, under command of Vice Admiral Sturdee, were on their way to the Falkland Islands, a wireless and coaling station off the southeast coast of South America. It would appear that Admiral von Spee contemplated an attack on the Falklands, and it would also appear that he did not anticipate the vigorous and alert strategy of his enemy. Had he done so he surely would have either tried to time his visit earlier or else have abandoned it entirely.

The Falkland Islands are 7,000 miles away from England—a comfortable 22 days cruise for capital ships at a speed of 14 knots with an additional day for coaling. The *Invincible* and *Inflexible* conducted some sweeping operations en route and made the voyage in 27 days from Plymouth, arriving at the Falklands on December 7th, the day before the battle. While an excellent piece of strategy, there is nothing miraculous in this secret movement of Sturdee's battle cruisers and it is rather strange that von Spee allowed himself to be caught completely off his guard. Cradock played into the hands of von Spee at Coronel by violating the principle of concentration. Von Spee played into the hands of Sturdee by careless strategy which did not time his attack on the Falklands before reinforcements could arrive from England. This he could easily have done as Coronel was only a seven day cruise from the Falklands.

As a matter of ordinary tactical precaution, moreover, it seems strange that he did not send a scout ship ahead to reconnoiter. At least he might have planned to arrive in the late afternoon, which would have given his ships a good chance to escape from a superior force under cover of darkness. On the other hand, little criticism can be made of England's strategy. On the morning of December 8, when the German squadron hove in sight of the lookout ship off the Falkland harbor entrance (Port Stanley), an opposing fighting force had been provided, and lay at anchor within, consisting of two battle cruisers, the *Invincible* and *Inflexible*; three armored cruisers, the *Carnarvon*, *Cornwall*, and *Kent*; the light cruisers *Bristol* and *Glasgow*; and the pre-dreadnought battleship *Canopus*.

The German squadron was the same as off Coronel—two armored cruisers, the *Scharnhorst* and *Gneisenau*, and three light cruisers, the *Leipzig*, *Nürnberg*, and *Dresden*.

The total tonnage of the British ships was 87,000—about two and a half times that of the German tonnage, 33,500. The total weight of the British broadside was 9,566 kilograms, nearly five times that of the German broadside, which was 2,032 kilograms.

The following table shows the comparative strength of the opposing squadrons:

THE GERMAN SQUADRON SIGHTED

The British ships had arrived at 10.30 a. m. the day before and had begun coaling at once. At the time of the engagement the battle cruisers, though not filled up, had sufficient fuel on board, and the fact that they were a little light in draft rather favored their speed.

At 8 a. m. the German ships were sighted, and orders were given to raise steam for full speed. The high land hid the main British force, and at 9.20 the *Gneisenau* and the *Nürnberg*, with guns trained on the wireless station, had closed to within 11,000 yards of the *Canopus*, who opened fire at them across the low land with her twelve-inch guns. The Germans hoisted their colors and turned away from their hidden foe, but a few minutes later turned to port, as though to close on the *Kent*, at the entrance of the harbor. Then the topmasts of the British battle cruisers were sighted, and the two German ships altered course and increased their speed to join their consorts.

The theory has been advanced that Admiral von Spee would have fared better if he had closed the harbor entrance and engaged the British ships at short range as they came out.*

BRITISH SQUADRON						
Name	Type	Date	Displacement (Tons)	Belt Armor	Guns	Speed
<i>Invincible</i>	Battle Cruiser.....	1908	17,250	7-inch	8—12", 16—4"	26.5
<i>Inflexible</i>	Battle Cruiser.....	1908	17,250	7-inch	8—12", 16—4"	26.5
<i>Carnarvon</i>	Armored Cruiser.....	1904	10,850	6-inch	4—7.5", 6—6"	23.0
<i>Cornwall</i>	Armored Cruiser.....	1901	9,800	4-inch	14—6"	23.5
<i>Kent</i>	Armored Cruiser.....	1903	9,800	4-inch	14—6"	23.0
<i>Bristol</i>	Scout Cruiser.....	1911	4,800	None	2—6", 10—4"	26.5
<i>Glasgow</i>	Scout Cruiser.....	1911	4,800	None	2—6", 10—4"	26.5
<i>Canopus</i>	Coast Defense Ship....	1897	12,950	6-inch	4—35 cal. 12", 12—6"	16.5
GERMAN SQUADRON						
<i>Scharnhorst</i>	Armored Cruiser.....	1907	11,600	6-inch	8—8.2", 6—6"	23.5
<i>Gneisenau</i>	Armored Cruiser.....	1907	11,600	6-inch	8—8.2", 6—6"	23.5
<i>Leipzig</i>	Protected Cruiser.....	1906	3,250	None	10—4"	23.0
<i>Nürnberg</i>	Scout Cruiser.....	1908	3,450	None	10—4"	24.0
<i>Dresden</i>	Scout Cruiser.....	1908	3,600	None	10—4"	24.0

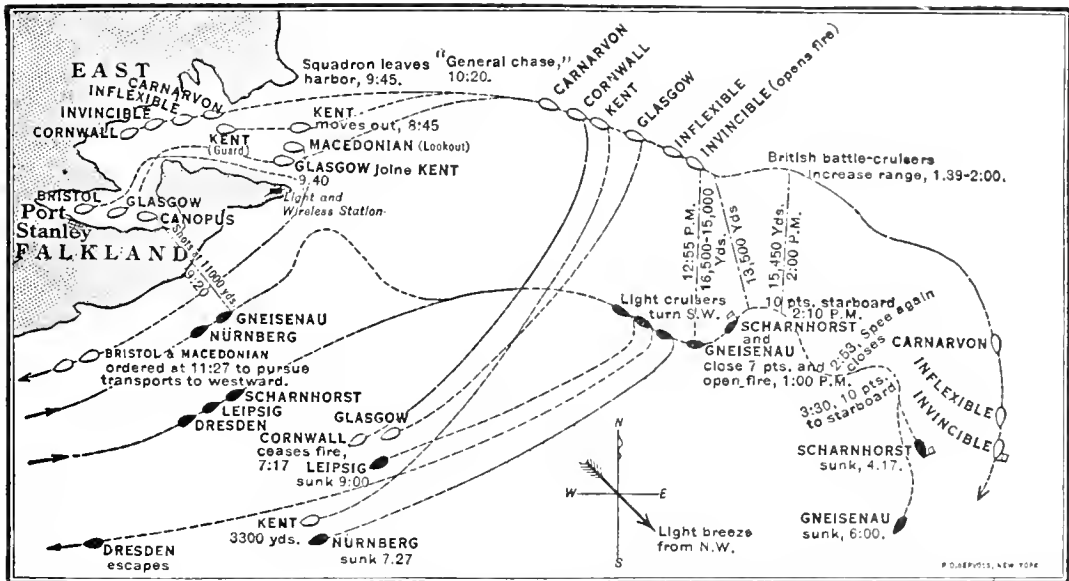
In addition to the fighting ships just mentioned, the converted cruiser *Macedonia* was acting as a lookout ship for the British, and the steamships *Baden* and *Santa Isabel* were in the train of the German squadron.

* "If *Gneisenau*, instead of turning away when the tripod masts of the battle cruisers were seen, had persisted in the advance towards *Kent*; had *Scharnhorst* joined her at top speed, it is morally certain that *Kent* and *Macedonia* would have been destroyed before either of the battle cruisers could come to their rescue. It would not have been difficult to have found dead ground that the guns of *Canopus* could not reach, and from such

This would have been a daring move and had he made it the results could hardly have been more disastrous to the German ships than they actually turned out. At the same time von Spee's turning away tactics were quite to be expected and few naval men will adversely criticize his conduct in using them. With 12-inch shells from hidden guns dropping around the *Gneisenau* and the unexpected presence of two battle cruisers in

harbor entrance, and take his chances in the open sea, in the hope that some stroke of good fortune might intervene in his favor.

At 9.45 a. m. the British squadron got under way and headed for the German ships, which were clearly in sight, hull down. The sea was calm, with a light breeze from the northwest. The visibility was at maximum, under a bright sun in a clear sky. At 10.20 signal for a general chase was made, but the



From *Naval Power in the War*, by George H. Derant

Chart of the Falkland Islands Engagement

the harbor it is probable that he suspected there might also be shore batteries, mines, torpedoes or even submarines. This might well have influenced him to keep clear of the

a point to have subjected the battle cruisers to a most damaging succession of salvos, as they emerged from the narrow channel, before there was any possibility of their replying. It was indeed possible that the motive power of each might have been so injured that a pursuit by the battle cruisers would have been impossible. At the worst, von Spee would have paid no higher price than he ultimately paid, and he might have won an exchange entirely beneficial to German arms.

"Certainly, an action fought in these conditions would have given ample time for the light cruisers to make their way into the winding and uncharted fiords of Patagonia. Here *Dresden* maintained herself for many weeks, and who knows but that the others might have lasted longer still? Had it been possible for the three to keep together they would have been formidable opponents for any single cruiser in search of them. Had they scattered and been able to maintain their coal supply, they could have held up British trade for a considerable time.

"Just as von Spee missed this real opportunity, so, later on, he first of all kept his light cruisers with him far too long, and then, throughout the action, accepted battle far too much on Admiral's Sturdee's conditions. But the initial mistake was the greatest." [From Pollen's *British Navy in Battle*.]

battle cruisers eased speed to twenty knots, to allow the other cruisers to get in station.

Three enemy ships, transports or colliers, had been reported as in sight off Port Pleasant, and the *Bristol* was ordered to take the *Macedonia* in company and destroy the transports. It appears that this report of sighting three ships was in error, as the *Bristol* found and destroyed only the two colliers *Baden* and *Santa Isabel*. There has been no confirmation of the rumor that von Spee had with him a military expedition recruited from German reservists in South America for the occupation of the Falklands.

STURDEE'S LONG RANGE GUNS AND SUPERIOR SPEED GAIN VICTORY

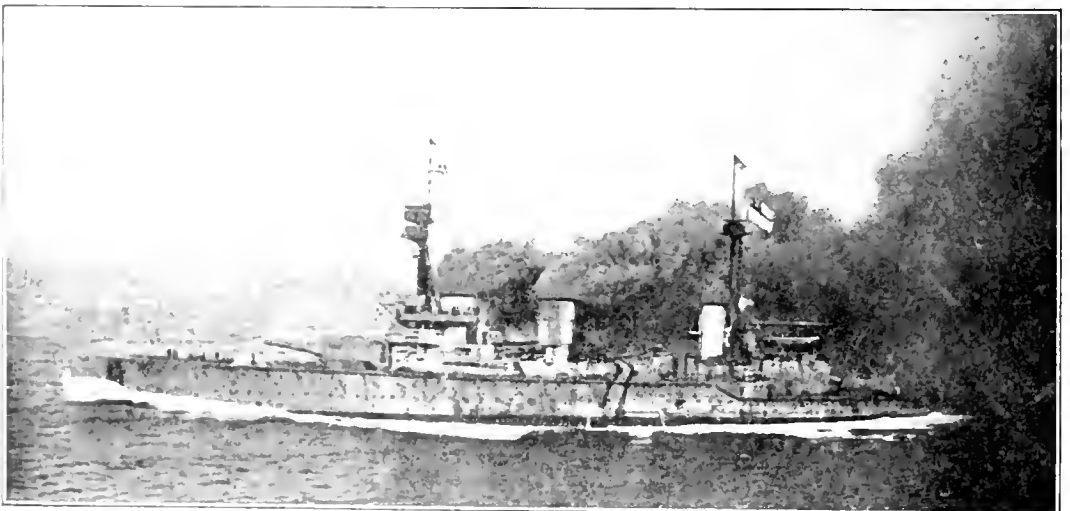
The British squadron, as a whole, was not able to close on the German squadron, and

at 12.20 Vice Admiral Sturdee decided to attack with his faster ships, the *Invincible*, *Inflexible*, and *Glasgow*. These three all had a speed of twenty-six and one-half knots, and were able to close quickly on the *Scharnhorst* and *Gneisenau*, which had a speed of only twenty-three and one-half knots. At 12.55 the battle cruisers opened fire on the German light cruiser *Leipzig* at a range of 16,500 to 15,000 yards. Soon after opening fire, the German light cruisers turned to the southwest and spread, in an effort to escape. The armored cruisers *Cornwall* and *Kent* and the light cruiser *Glasgow* gave chase, while the battle cruisers and the *Carnarvon* kept on after the *Scharnhorst* and *Gneisenau*. Admiral Sturdee maintained, for the most part, a range of between 16,000 and 12,000 yards, destroying the enemy with his twelve-inch guns in rather leisurely fashion, without getting within the effective range of the German 8.2-inch guns. The engagement was a long one and the firing intermittent and deliberate. At 4.17 p. m. the *Scharnhorst* sank, with her flag flying. The *Gneisenau* kept up the unequal fight, but at 6 p. m. she also sank with her flag flying. The *Invincible* received 22 hits without any personnel casualties. The *Inflexible* was hit three times and had three men wounded.

The tactics of the battle cruiser engagement illustrate the use of superior speed coupled with superior gun power to destroy

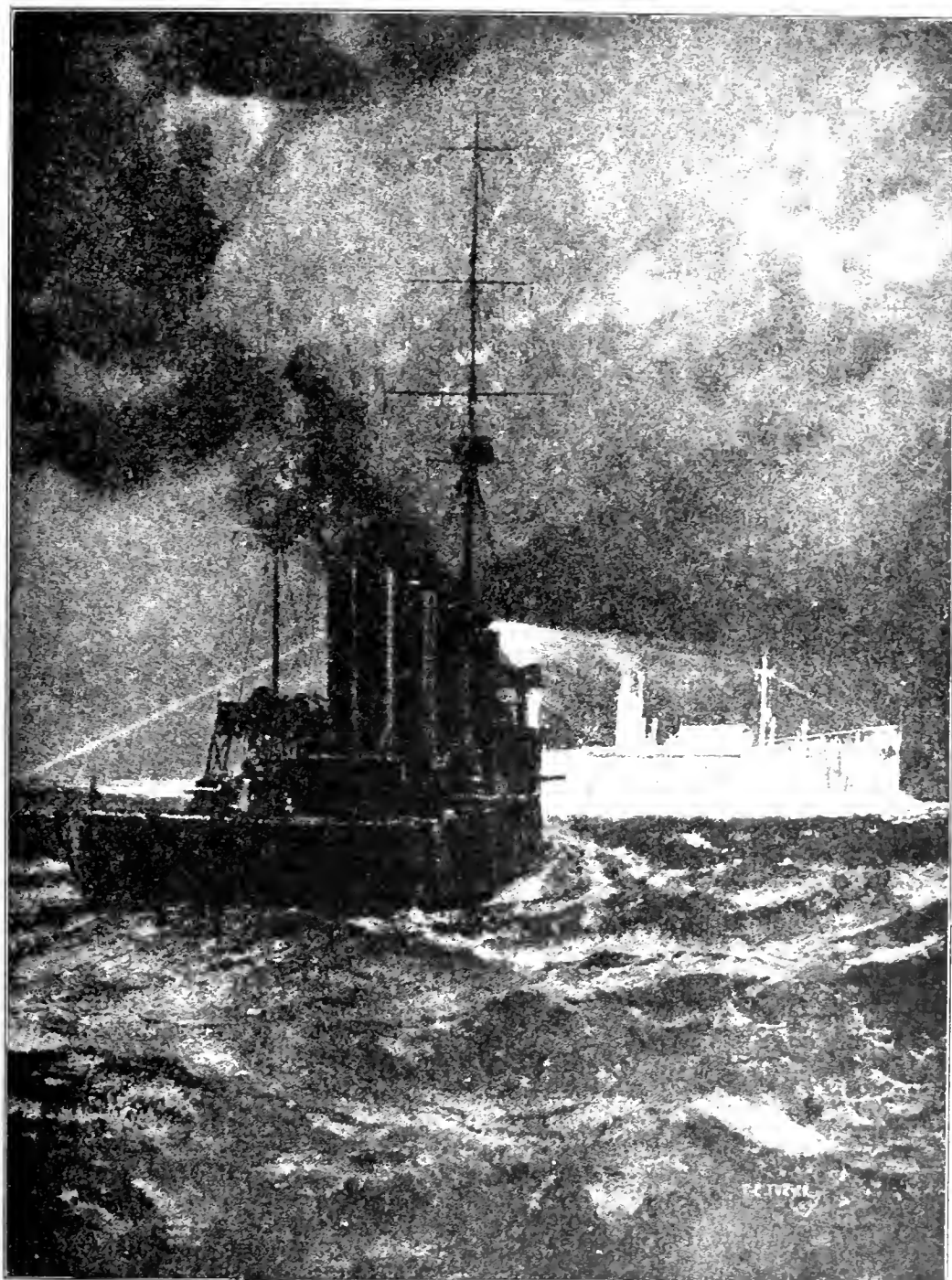
the enemy while incurring as little damage as possible. No doubt von Spee would have much preferred a close range action to make his 8.2-inch guns effective, and soon after the engagement opened he turned toward the British to close and to bring his broadsides into action. The British countered by turning away and also presenting broadside fire. After the range had opened von Spee gave up his attempt to close and turned away again, rapidly opening the range and developing a stern chase during which there was a lull in the firing. As the battle cruisers with their superior speed overhauled the enemy the action was renewed. Again von Spee turned toward the British to bring his broadsides into action and the previous maneuver was repeated. By this time, however, the out-classed German ships were badly damaged. Although their final destruction was only a question of time, and in spite of shortage of ammunition, they fought gamely to the very end.

It has been urged that von Spee should have persisted in his attempts to close even to the extent of heading straight for the British ships. It is doubtful, however, if this would have helped him. To present only a bow fire to the powerful raking broadsides of the *Inflexible*, *Invincible* and *Carnarvon* constituted a maneuver of questionable promise. Moreover, Sturdee could have still turned away and kept the range to suit him. He



Underwood and Underwood.

Battle Cruiser *Invincible* Going Into Action at the Battle of the Falklands



A British Patrol Ship Approaching a Suspicious Neutral Vessel at Night

The waters of the North Sea and the English Channel were systematically combed by patrol boats in search of neutral vessels with contraband for Germany. Hundreds of ships were taken to Kirkwall, where their cargoes were examined and in many cases condemned, giving rise to many complicated questions of international law.

would not have allowed the enemy to attack with torpedoes. Again, it is known that the German ships were short of ammunition and the only possible chance for the German squadron was that weather or some accident to the British ships might intervene in the former's favor.*

NÜRNBERG AND LEIPZIG SUNK WHILE
TRYING TO ESCAPE

In the chase after the light cruisers the *Glasgow* was the only ship with superior speed to the *Nürnberg* and *Dresden*. She was faster by $2\frac{1}{2}$ knots. The *Cornwall* is listed half a knot slower than the *Nürnberg* and *Dresden* and half a knot faster than the *Leipzig*. The *Leipzig* and *Kent* show the same speed. It was, therefore, a race between the engineers. The *Dresden* got away, but the *Kent* made a splendid record in overhauling the faster *Nürnberg* and bringing her to close decisive action. The *Nürnberg* sank at 7.27 p. m. The *Nürnberg* scored 36 hits on the *Kent*, but the latter suffered only four killed and 12 wounded. The *Glasgow* and *Cornwall* concentrated on the *Leipzig*, and finally destroyed her at 9 p. m. The *Cornwall* was hit 18 times without any casualty to personnel. The *Glasgow* had one killed and five wounded.

The question naturally arises why did not the *Glasgow* go after the *Dresden*? The absence of the *Bristol* was sadly felt, but the brilliant work of the engineer force of the *Kent* overcame this handicap. The *Cornwall* should have been able to handle the *Leipzig* alone and so have left the *Glasgow* free to chase the *Dresden*. Criticisms, however, should be made with reservation. There were not great differences in speed between the opposing squadrons, and when ships are trying to make top speed for comparatively long stretches, minor machinery trouble, such as a warm bearing or feed pump difficulty, may cause considerable embarrassment.

The *Dresden* escaped, and made a precarious commerce destroying cruise, which lasted until March 14, 1915, when she was discov-

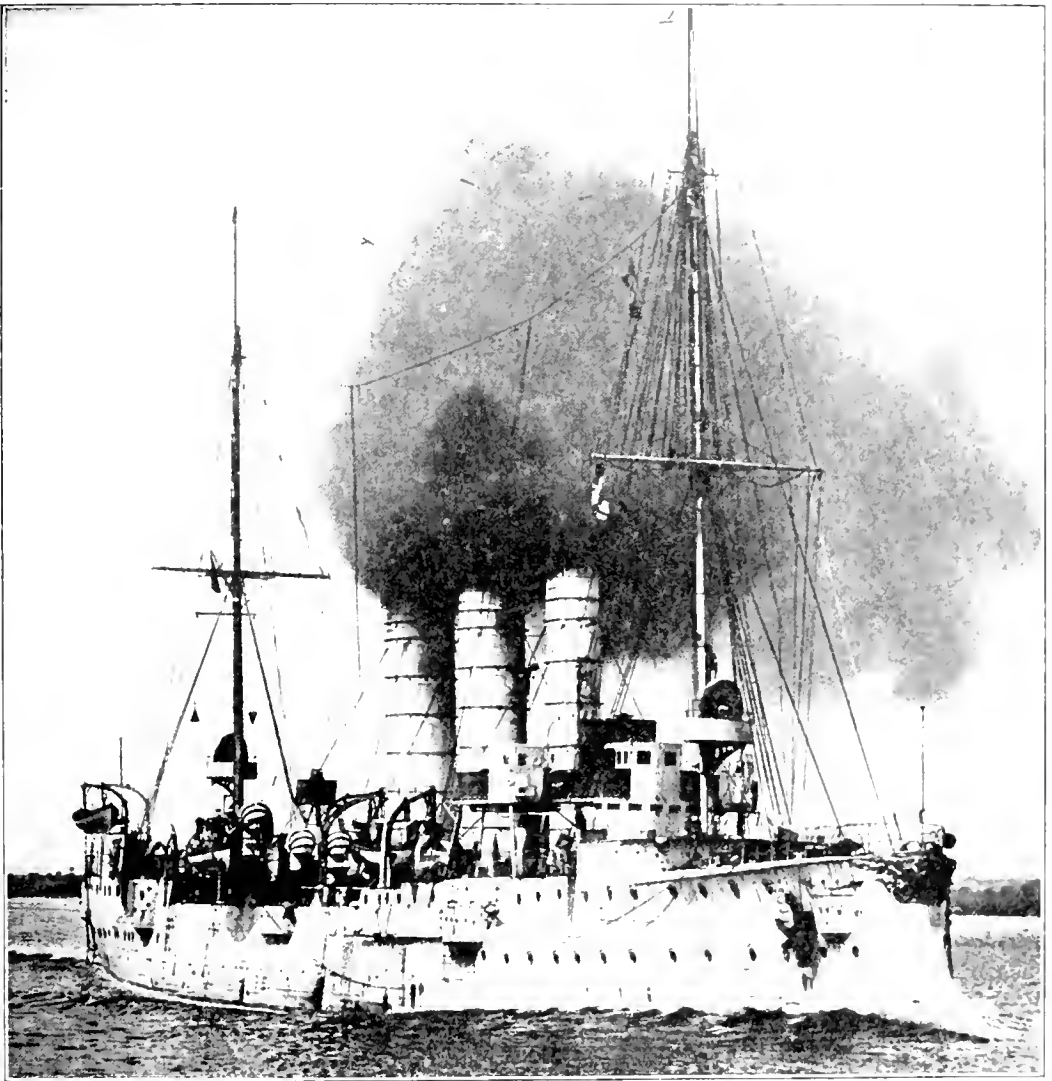
ered near Juan Fernandez island and destroyed by the *Kent*, *Glasgow*, and auxiliary cruiser *Orama*.

Hindsight is always better than foresight, and we should be slow to criticize without knowing full particulars, but one cannot help wondering at the tactical disposition of the *Bristol* and questioning if the *Dresden* would have escaped had the *Bristol* been on hand to help the *Glasgow*. It is to be noted that the *Bristol*, a sister ship to the *Glasgow*, was faster and better armed than any of the German light cruisers, and was also three and one-half knots faster than the British armored cruisers *Carnarvon*, *Cornwall* and *Kent*. The reasons for sending a twenty-six-and-one-half-knot ship instead of a twenty-three-knot ship after the transports are not very clear, especially as the *Bristol* and the *Glasgow* were the only two ships besides the battle cruisers fast enough to catch the *Nürnberg* and the *Dresden*. The *Bristol*, to be sure, accomplished her assigned mission in destroying the German steamships. She did it in very literal fashion and two fine new steamers of 7,000 and 5,000 tons were sent to the bottom, a matter that must have been rather annoying to those who were complaining of the shortage of shipping. But could not the three-knot slower armored cruiser *Carnarvon* have done this equally well? As it was, the *Carnarvon* served no useful purpose, and no avail was made of the valuable speed asset of the *Bristol*.

The British lost six killed and had sixteen wounded. All the German ships except the *Dresden* were sunk, and only 180 men were saved from the total complements of 2,200. This decisive naval action gave the Allies practically undisputed control of the high seas.

The situation in South America and South Africa at once changed in favor of the Allies. Soon after the outbreak of war, rebels in a section of the Transvaal and Orange Colony had made common cause with German South-west Africa against the British South Africa Government and for four months von Spee's squadron threatened the British line of communications and strengthened the hands of

* It was said that the mission of the battle cruiser was totally unappreciated till the *Invincible* sank Cradock's murderer, von Spee, and all his squadron. Tortoises were apportioned to catch one hare. The Almighty arranged the greyhound to catch a hare, a greyhound so much bigger than a hare as to annihilate it. And there is no case on record of a hare hunting a greyhound. So it was with the *Invincible* and von Spee's flagship, which only a short month before had sunk our poor Cradock in his *Good Hope*.—Lord Fisher in a press article published after



© Underwood and Underwood.

The German Cruiser *Leipzig*, Sunk in the Battle of the Falklands While Trying to Escape

the enemy. Allied shipping in South American waters was paralyzed and did not dare to put to sea. Such is the influence of a fleet in being even when faced by a greatly superior enemy. The effect of the Falkland battle was instantaneous. Exorbitant insurance rates dropped to ordinary standards. Allied merchantmen once more steamed out of foreign ports. British South Africa was relieved of its embarrassment and supported by secure communications was able to institute a vigorous offensive which resulted in sup-

pressing the rebellion and the ultimate conquest of German Southwest Africa.

II

STURDEE'S OFFICIAL REPORT ON THE BATTLE OF THE FALKLANDS

ADMIRALTY, 3rd March, 1915.

The following dispatch has been received from Vice-Admiral Sir F. C. Doveton-Sturdee,

K.C.B., C.V.O., C.M.G., reporting the action off the Falkland Islands on Tuesday, the 8th of December, 1914:—

(A.)—PRELIMINARY MOVEMENTS

The squadron, consisting of H.M. ships *Invincible*, flying my flag; *Inflexible*, *Carnarvon*, flying the flag of Rear-Admiral Archibald P. Stoddart; *Cornwall*, *Kent*, *Glasgow*, *Bristol*, and *Macedonia*, arrived at Port Stanley, Falkland Islands, at 10.30 a.m. on Monday, the 7th December, 1914. Coaling was commenced at once, in order that the ships should be ready to resume the search for the enemy's squadron the next evening, the 8th December.

At 8 a.m. on Tuesday, the 8th December, a signal was received from the signal station on shore:—

"A four-funnel and two-funnel man-of-war in sight from Sapper Hill, steering northwards."

At this time the positions of the various ships of the squadron were as follows:—

Macedonia: At anchor as look-out ship.

Kent (guard ship): At anchor in Port William.

Invincible and *Inflexible*: In Port William.

Carnarvon: In Port William.

Cornwall: In Port William.

Glasgow: In Port Stanley.

Bristol: In Port Stanley.

The *Kent* was at once ordered to weigh, and a general signal was made to raise steam for full speed.

At 8.20 a.m. the signal station reported another column of smoke in sight to the southward, and at 8.45 a.m. the *Kent* passed down the harbor and took up a station at the entrance.

The *Canopus* reported at 8.47 a.m. that the first two ships were 8 miles off, and that the smoke reported at 8.20 a.m. appeared to be the smoke of two ships about 20 miles off.

At 8.50 a.m. the signal station reported a further column of smoke in sight to the southward.

The *Macedonia* was ordered to weigh anchor on the inner side of the other ships, and await orders.

At 9.20 a.m. the two leading ships of the enemy (*Gneisenau* and *Nürnberg*), with guns trained on the wireless station, came within range of the *Canopus*, who opened fire at them across the low land at a range of 11,000 yards. The enemy at once hoisted their colors and turned away. At this time the masts and smoke of the enemy were visible from the upper bridge of the *Invincible* at a range of approximately

17,000 yards across the low land to the south of Port William.

A few minutes later the two cruisers altered course to port, as though to close the *Kent* at the entrance to the harbor, but about this time it seems that the *Invincible* and *Inflexible* were seen over the land, as the enemy at once altered course and increased speed to join their consorts.

The *Glasgow* weighed and proceeded at 9.40 a.m. with orders to join the *Kent* and observe the enemy's movements.

At 9.45 a.m. the squadron—less the *Bristol*—weighed, and proceeded out of harbor in the following order:—*Carnarvon*, *Inflexible*, *Invincible*, and *Cornwall*. On passing Cape Pembroke Light, the five ships of the enemy appeared clearly in sight to the south-east, hull down. The visibility was at its maximum, the sea was calm, with a bright sun, a clear sky, and a light breeze from the north-west.

At 10.20 a.m. the signal for a general chase was made. The battle cruisers quickly passed ahead of the *Carnarvon* and overtook the *Kent*. The *Glasgow* was ordered to keep two miles from the *Invincible*, and the *Inflexible* was stationed on the starboard quarter of the flagship. Speed was eased to 20 knots at 11.15 a.m. to enable the other cruisers to get into station.

At this time the enemy's funnels and bridges showed just above the horizon.

Information was received from the *Bristol* at 11.27 a.m. that three enemy ships had appeared off Port Pleasant, probably colliers or transports. The *Bristol* was therefore directed to take the *Macedonia* under his orders and destroy transports.

The enemy were still maintaining their distance, and I decided, at 12.20 p.m., to attack with the two battle cruisers and the *Glasgow*.

At 12.47 p.m. the signal to "Open fire and engage the enemy" was made.

The *Inflexible* opened fire at 12.55 p.m. from her fore turret at the right-hand ship of the enemy, a light cruiser; a few minutes later the *Invincible* opened fire at the same ship.

The deliberate fire from a range of 16,500 to 15,000 yards at the right-hand light cruiser, who was dropping astern, became too threatening, and when a shell fell close alongside her at 1.20 p.m. she (the *Leipzig*) turned away, with the *Nürnberg* and *Dresden* to the south-west. These light cruisers were at once followed by the *Kent*, *Glasgow*, and *Cornwall*, in accordance with my instructions.

The action finally developed into three sep-

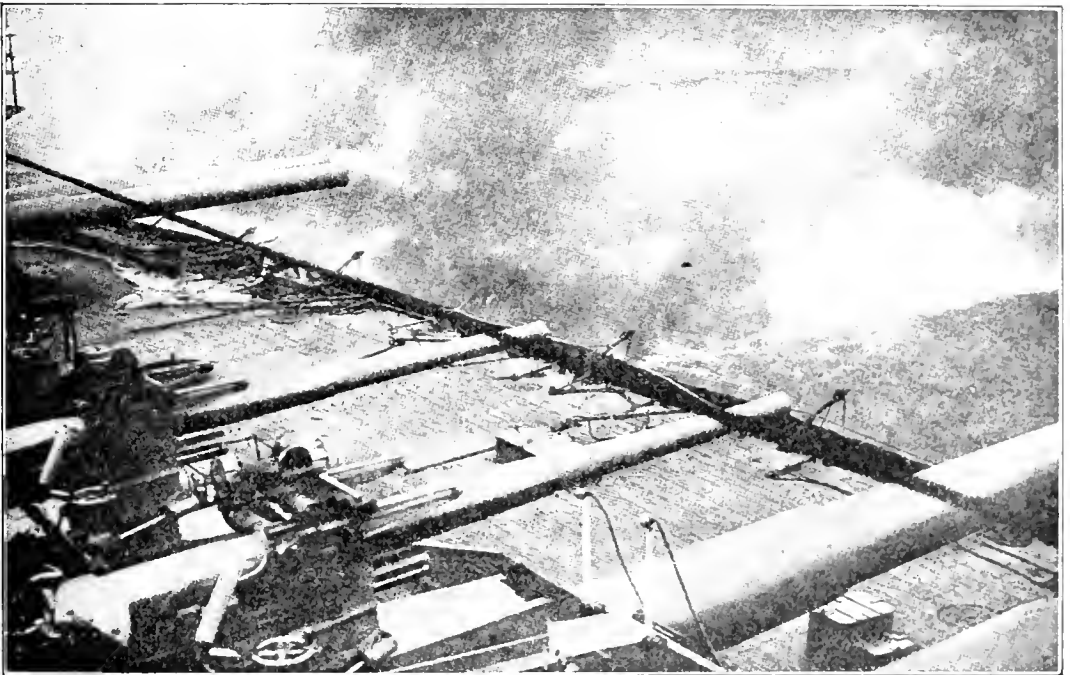
arate encounters, besides the subsidiary one dealing with the threatened landing.

(B.)—ACTION WITH THE ARMORED CRUISERS

The fire of the battle cruisers was directed on the *Scharnhorst* and *Gneisenau*. The effect of this was quickly seen, when at 1.25 p.m., with the *Scharnhorst* leading, they turned about 7 points to port in succession into line ahead and opened fire at 1.30 p.m. Shortly afterwards

seriously, and her fire slackened perceptibly; the *Gneisenau* was badly hit by the *Inflexible*.

At 3.30 p.m. the *Scharnhorst* led round about 10 points to starboard; just previously her fire had slackened perceptibly, and one shell had shot away her third funnel; some guns were not firing, and it would appear that the turn was dictated by a desire to bring her starboard guns into action. The effect of the fire on the *Scharnhorst* became more and more apparent in consequence of smoke from fires, and also escaping



Firing a Salvo

A salvo consists of the simultaneous firing of all the guns of a ship's battery. All modern ships' guns are fired electrically, the wiring being of such a character that the closing of one firing key fires all guns at the same instant.

speed was eased to 24 knots, and the battle cruisers were ordered to turn together, bringing them into line ahead, with the *Invisible* leading.

The range was about 13,500 yards at the final turn, and increased, until, at 2 p.m., it had reached 16,450 yards.

The enemy then (2.10 p.m.) turned away about 10 points to starboard and a second chase ensued, until, at 2.45 p.m., the battle cruisers again opened fire; this caused the enemy, at 2.53 p.m., to turn into line ahead to port and open fire at 2.55 p.m.

The *Scharnhorst* caught fire forward, but not

steam; at times a shell would cause a large hole to appear in her side, through which could be seen a dull red glow of flame. At 4.4 p.m. the *Scharnhorst*, whose flag remained flying to the last, suddenly listed heavily to port, and within a minute it became clear that she was a doomed ship; for the list increased very rapidly until she lay on her beam ends, and at 4.17 p.m. she disappeared.

The *Gneisenau* passed on the far side of her late flagship, and continued a determined but ineffectual effort to fight the two battle cruisers.

At 5.8 p.m. the forward funnel was knocked over and remained resting against the second

funnel. She was evidently in serious straits, and her fire slackened very much.

At 5.15 p.m. one of the *Gneisenau's* shells struck the *Invincible*; this was her last effective effort.

At 5.30 p.m. she turned towards the flagship with a heavy list to starboard, and appeared stopped, with steam pouring from her escape pipes and smoke from shell and fires rising everywhere. About this time I ordered the signal "Cease fire," but before it was hoisted the *Gneisenau* opened fire again, and continued to fire from time to time with a single gun.

At 5.40 p.m. the three ships closed in on the *Gneisenau*, and, at this time, the flag flying at her fore truck was apparently hauled down, but the flag at the peak continued flying.

At 5.50 p.m. "Cease fire" was made.

At 6 p.m. the *Gneisenau* heeled over very suddenly, showing the men gathered on her decks and then walking on her side as she lay for a minute on her beam ends before sinking.

The prisoners of war from the *Gneisenau* report that, by the time the ammunition was expended, some 600 men had been killed and wounded. The surviving officers and men were all ordered on deck and told to provide themselves with hammocks and any articles that could support them in the water.

When the ship capsized and sank there were probably some 200 unwounded survivors in the water, but, owing to the shock of the cold water, many were drowned within sight of the boats and ship.

Every effort was made to save life as quickly as possible, both by boats and from the ships; life-buoys were thrown and ropes lowered, but only a proportion could be rescued. The *Invincible* alone rescued 108 men, 14 of whom were found to be dead after being brought on board; these men were buried at sea the following day with full military honors.

(C.)—ACTION WITH THE LIGHT CRUISERS

At about 1 p.m., when the *Scharnhorst* and *Gneisenau* turned to port to engage the *Invincible* and *Inflexible*, the enemy's light cruisers turned to starboard to escape; the *Dresden* was leading and the *Nürnberg* and *Leipzig* followed on each quarter.

In accordance with my instructions, the *Glasgow*, *Kent*, and *Cornwall* at once went in chase of these ships; the *Carnarvon*, whose speed was insufficient to overtake them, closed the battle cruisers.

The *Glasgow* drew well ahead of the *Cornwall* and *Kent*, and at 3 p.m. shots were ex-

changed with the *Leipzig* at 12,000 yards. The *Glasgow's* object was to endeavor to outrange the *Leipzig* with her 6-inch guns and thus cause her to alter course and give the *Cornwall* and *Kent* a chance of coming into action.

At 4.17 p.m. the *Cornwall* opened fire, also on the *Leipzig*.

At 7.17 p.m. the *Leipzig* was on fire fore and aft, and the *Cornwall* and *Glasgow* ceased fire.

The *Leipzig* turned over on her port side and disappeared at 9 p.m. Seven officers and eleven men were saved.

At 3.36 p.m. the *Cornwall* ordered the *Kent* to engage the *Nürnberg*, the nearest cruiser to her.

Owing to the excellent and strenuous efforts of the engine room department, the *Kent* was able to get within range of the *Nürnberg* at 5 p.m. At 6.35 p.m. the *Nürnberg* was on fire forward and ceased firing. The *Kent* also ceased firing and closed to 3,300 yards; as the colors were still observed to be flying in the *Nürnberg*, the *Kent* opened fire again. Fire was finally stopped five minutes later on the colors being hauled down, and every preparation was made to save life. The *Nürnberg* sank at 7.27 p.m., and, as she sank, a group of men were waving a German ensign attached to a staff. Twelve men were rescued, but only seven survived.

The *Kent* had four killed and twelve wounded, mostly caused by one shell.

During the time the three cruisers were engaged with the *Nürnberg* and *Leipzig*, the *Dresden*, who was beyond her consorts, effected her escape owing to her superior speed. The *Glasgow* was the only cruiser with sufficient speed to have had any chance of success. However, she was fully employed in engaging the *Leipzig* for over an hour before either the *Cornwall* or *Kent* could come up and get within range. During this time the *Dresden* was able to increase her distance and get out of sight.

The weather changed after 4 p.m., and the visibility was much reduced; further, the sky was overcast and cloudy, thus assisting the *Dresden* to get away unobserved.

(D.)—ACTION WITH THE ENEMY'S TRANSPORTS

A report was received at 11.27 a.m. from H.M.S. *Bristol* that three ships of the enemy, probably transports or colliers, had appeared off Port Pleasant. The *Bristol* was ordered to take the *Macedonia* under his orders and destroy the transports.

H.M.S. *Macedonia* reports that only two ships, steamships *Baden* and *Santa Isabel*, were

present; both ships were sunk after the removal of the crew.

I have pleasure in reporting that the officers and men under my orders carried out their duties with admirable efficiency and coolness, and great credit is due to the Engineer Officers of all the ships, several of which exceeded their normal full speed.

III

STURDEE'S RACE TO THE FALKLANDS

THERE was something intensely dramatic in Rear-Admiral Sturdee's arrival at the Falkland Islands with his squadron of fighting ships just one day ahead of the German cruisers under von Spee. The Allies had learned with dismay of von Spee's successful engagement with the British squadron off Coronel in the Pacific on November 2, 1914. Arm-chair strategists in England were discussing with their customary wisdom the incompetency of England's naval strategy in having sent Cradock into the Pacific to look for von Spee's fleet with old ships and inferior guns. It was another case—very much like that of the Dardanelles naval fiasco—in which Great Britain's prestige was seriously at stake. But with great promptitude and far-seeing acumen, the Admiralty decided to intercept von Spee in case his next move should be an attack on the Falklands. A squadron of powerful ships was ordered to be made ready to put to sea:

"Who was to command the expedition? That question was probably not for a moment in doubt. It was evident that if anyone was ever to be criticized for what had happened at Coronel, it would be those officers at the Admiralty who had advised on the reinforcements to be sent out to Sir Christopher Cradock. The chief of these was Rear-Admiral Sir Doveton Sturdee. Now, as Admiral Sturdee might some day be held partly responsible for Cradock's fate, it was only reasonable that he should be given the chance to 'clean-up' the situation himself. Lord Fisher saw this with his usual clearness of vision, and no doubt made the offer with his usual clearness of speech. Sir Doveton Sturdee, of course, accepted it with the utmost alacrity, and the necessary orders were

given at once, perhaps before the public even knew of the disaster. It is said that the dockyard officials asked for two more days in which to get the ships ready, and that the First Sea Lord replied instantly that they must and would sail on the day named, ready or not ready. If this is true, it was one of the links



Vice-Admiral Sir Frederick C. D. Sturdee
Commander of the British Squadron at the Battle
of the Falklands.

in a chain of extraordinary good fortune. In a long affair of this kind it is impossible to make exact calculations, and there had to be many delays on both sides before the fight actually came off—Admiral von Spee, for example, took five weeks in reaching Port Stanley from Coronel. So that I say Admiral Sturdee had extraordinary good fortune in his voyage; and he himself would go still further. Those who make

* From *Tales of the Great War*, by Newbolt.

a great effort in a great cause often feel that they are helped by a power beyond themselves. Admiral Sturdee did all that man can do; but he believes that his victory was made inevitable by something greater than man.

VON SPEE BLUFFED BY WIRELESS

"The expedition was so successfully kept secret that not only the British public, but also the German Admiralty, were in complete ignorance of it. They must have expected a second squadron and one stronger than the first, to be sent against von Spee; but they certainly had no idea that it would include battle cruisers detached from the Grand Fleet for this special purpose. And von Spee himself believed that whatever might happen in the long run, for the present he was safe and had the Falklands at his mercy. Our Admiralty expected that he would make for the islands, for the sake of the coal and the wireless station there; but it is said that in order to be quite sure of catching him without a long chase, a plan was devised for drawing him to the spot in time to meet Admiral Sturdee. The plan was this: a wireless message was sent to the Captain of the *Canopus*, ordering him to return to Port Stanley, and telling him that he would be quite safe in doing this, as the forts there had been armed with new guns. The message was, of course, taken in and read off by the Germans, who believed it to be a piece of false information (which it was) intended to bluff them out of going to the Falklands (which was just the opposite of what it was intended to do). They informed von Spee accordingly, and on November 15, having finished his coaling or refitting, he started down the coast of Chile for the Straits of Magellan or Cape Horn.

"On that same day the British squadron was beginning to rendezvous at a certain place on the other side of South America, and within a few days afterwards the two great battle cruisers arrived, the *Invincible* flying the flag of Admiral Sturdee. They coaled at once; and then, says Mr. William Buchan, 'a systematic search was commenced southwards. The squadron, consisting of seven ships, spread out to extreme visual signaling distance, which reduced the use of wireless to a minimum, a valuable asset in our search.' This last remark gives us a hint of the skill with which Admiral Sturdee had managed his long and secret run out. He had already brought the *Invincibles* 5,000 miles without betraying their existence to any wireless station on ship or shore; he had nearly 2,500 miles more to cover, and he was determined

not to let von Spee get wind of him till it was too late to escape.

STURDEE AT THE FALKLANDS A DAY AHEAD OF THE GERMANS

"The last week of the voyage was one of great suspense; both fleets knew that they were heading for a fight. With a map, and a little imagination, it is possible to see the whole thing; on the one side of South America the five German cruisers, with their two colliers, running in close formation down the coast of Patagonia, their commanders licking their lips over the ships they had sunk and the islands they meant to capture; on the other side of the ever narrowing continent, the British squadron flung out in a wide irresistible line, netting the South Atlantic from the coast to a distance of over two hundred miles out to sea. Every day, as we watch them, the two fleets fail to sight each other; but every day they draw nearer to one another—nearer, that is, to a battle which only one of them can survive. And there lie the Falklands; there lies poor little Port Stanley with her wireless station and her dolls' houses and her Scottish shepherds, and the gallant old *Canopus* in fancy dress upon her mud-bank.* There was no flinching there; they had no doubt there would be a British victory, some day and somewhere. But it would make all the difference in the world to them whether the German or the British Admiral reached them first.

"On the morning of December 7, they saw smoke streamers on the northern horizon. They were still in suspense, for von Spee might possibly be doubling back that way. An hour later the *Invincibles* were running into Port Stanley. The Falklands were saved from the Huns—by a single day."

IV

LEIPZIG "BLAZING LIKE AN OIL FACTORY"—THEN SINKS

THE sinking of the *Leipzig* is described in the following extracts from a letter from H.M.S. *Cornwall*:

"At about 9 p.m. she loosed off a rocket as a sign of surrender, and so we lowered what boats we could and sent them to their aid. I shall never in all my life forget the sight of that ship going down. All the ship's company had gathered on the foc's'le, and one or two boats

* The *Canopus* had been camouflaged to blend with the shore line and render her an inconspicuous target.

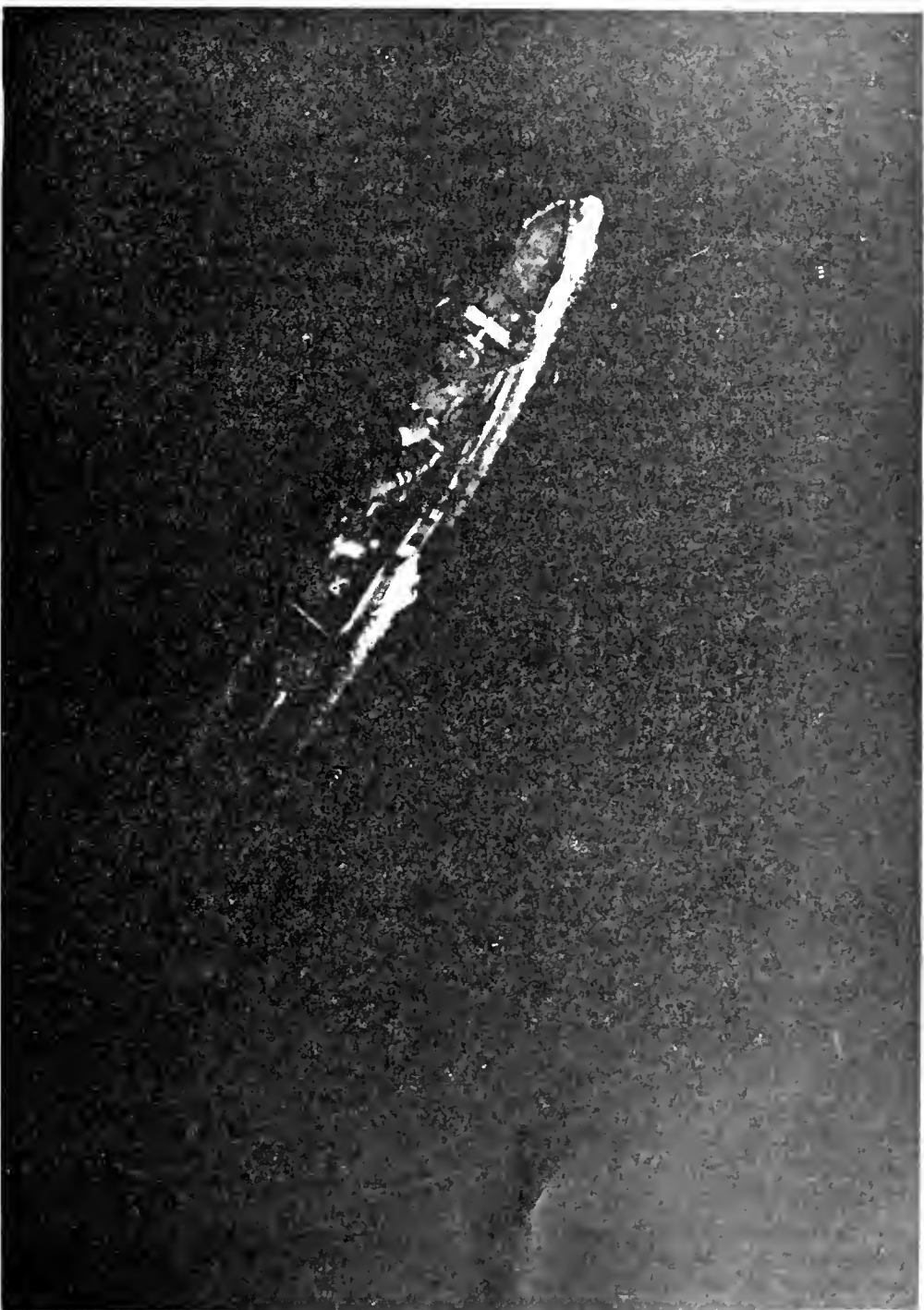


Photo by Hunter.

An Airplane Carrier

The *Pegasus*, one of the smaller British plane-ships, viewed from above. The plane on the forward platform is ready for flight.

were still being lowered when the captain leant over the side of the bridge and said, 'It's no good. She's going!' The men in the boat which was half lowered stood up and every face was turned towards the blazing ship. You can't imagine what she was like. It was nearly dark, about 9.25 p.m., and the red glare from the flames lit up the remains of what has been the home of some 300 human beings a few hours before. As we saw her then she lay like an inferno on the sea. She had only the veriest stump of her second funnel left. The other two had been knocked completely away. Her mainmast was gone, and the upper half of her foremast. Aft she was blazing like an oil factory, and forward she was also burning furiously. Her parts showed up like faint red circles, and occasional spurts of steam and sparks ascended from her waist. How any ship could have floated like it Heaven alone knows, and how anyone can have lived through it surely astounds one. Suddenly she heeled to port and her stump of a foremast slowly dipped into the water as she sank with scarcely a ripple by the head. There was no cheering or anything of the sort. We just stood there in absolute silence, and personally, I thought of the poor devils who had been chased for five months only to end like that. There is no doubt whatsoever that they fought like heroes. As for ourselves they hit us fair and square eighteen times, and yet we had not one single casualty."

Sturdee had restored English naval prestige in South America, avenged the men of the *Good Hope* and the *Monmouth*, and removed from the trade routes of the Atlantic a terrible menace.

V

PERSONAL NARRATIVE OF AN OFFICER ON THE *INFLEXIBLE*

AN officer on the *Inflexible* in a letter home gave a graphic description of the destruction of the *Scharnhorst* and the *Gneisenau* and of the scenes which followed in saving the survivors from drowning. He says:

"We blazed away at the *Scharnhorst* for three hours, and finally she sank at about 4 p.m. It was very hard to tell what damage we had done to her, as there was a great deal of smoke, and we were, of course, a considerable distance away. We could see that she had three funnels gone and both masts shot away, and must have

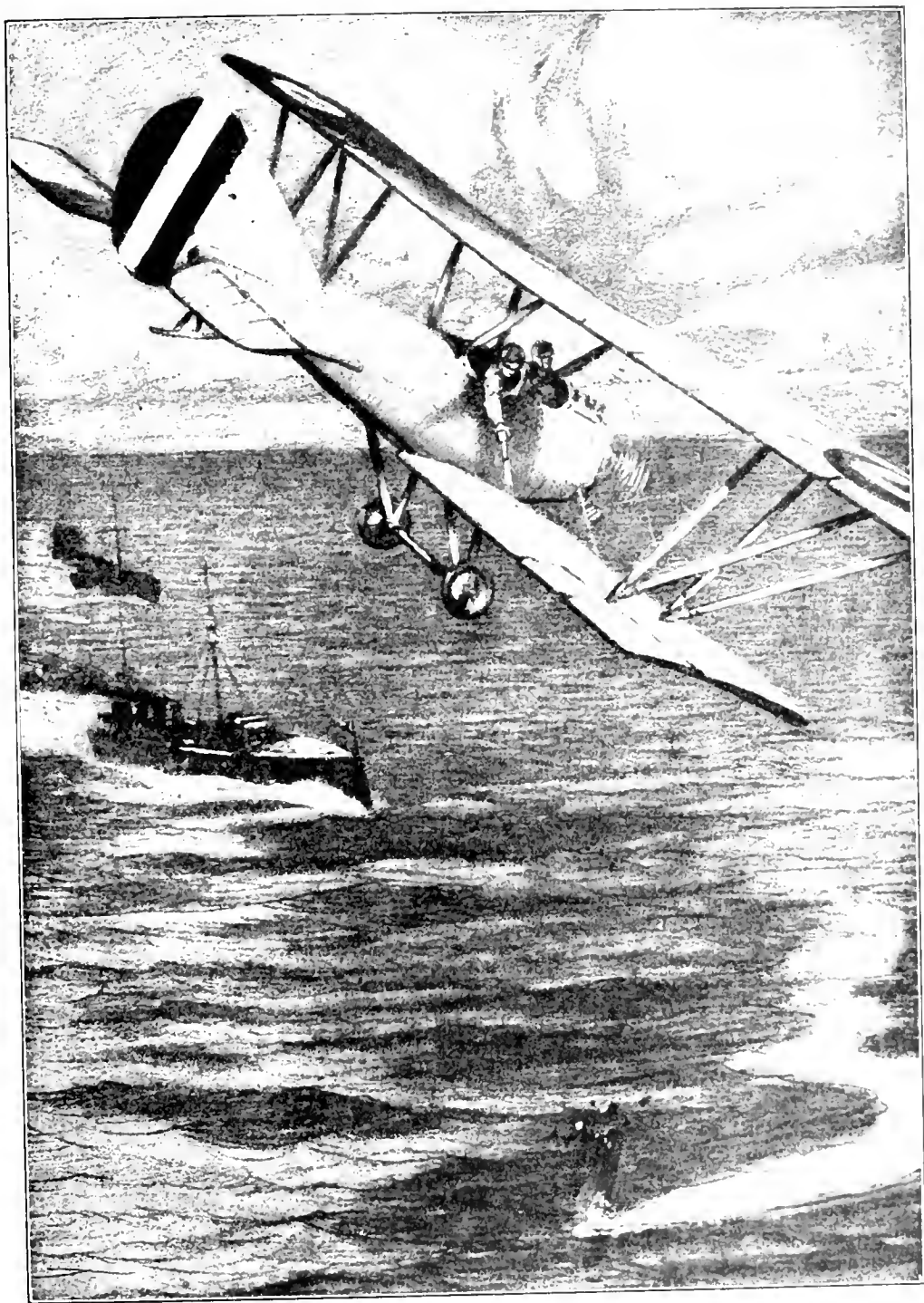
been more like a sieve than anything else before she finally went down. We had very little damage done to us, as we had an immense superiority in gun fire. Our 12-inch guns were hitting her pretty hard all the time, but as she had only 8.2-inch guns her fire was very ineffective all the time, though I must say remarkably accurate. When she started to go down she went very quickly and unfortunately we were unable to stop and pick up any of her men, as the *Gneisenau* seemed still to have a good deal of kick left in her.

GNEISENAU SINKING, STILL FIRES A SOLITARY GUN

"We went to the flagship's assistance and started in again at the *Gneisenau*. At about 4.45 p.m. she appeared to be sinking and had ceased fire. Her colors had been shot away several times, but she had hoisted them again, and now we thought she had hauled them down. The only visible damage done to her, was her foremost funnel shot away, though, as we found out afterwards, she was badly knocked about. Apparently she had no more colors left, but was still game, for as we were closing she managed to get off one more solitary gun. We had to stand off again, and gave her a few more rounds, and another of our cruisers which had come up let off a few at her. About 5.15 she was observed to be sinking, and we started to close her. She heeled over very slowly till she got to about 70 degrees, then she went over with a rush, there was a large cloud of steam, she cocked her stern up in the air and disappeared.

"I should think about 300 to 400 of her crew managed to get away from the ship, and were left floating about in the water, hanging on to bits of wreckage, hammocks, and anything they could lay hands on. Their heads bobbing about in the water looked for all the world like a great patch of brown seaweed. As soon as possible we got out what boats we had left to pick them up, and threw lifebuoys and any available bits of wood to them. The flagship and the other cruiser had come up and were doing the same, but a lot of them were drowned as we were short of boats and the sea had started to get choppy. It also was awfully cold in the water, and those we got on board were half frozen, and you could see many of them in the water letting go of the spars or whatever they were holding on to as they gradually got numbed. We saw icebergs the next day.

"We picked up the commander of the *Gneisenau*, seven officers and about 50 men, and be-



An Airplane Observer Firing at the Periscope of a Submarine

tween the three ships we managed to save about 180. But a lot of them were drowned and it was an awful sight to see them floating about in the water, shouting out for the boat to come to them, and then they would suddenly go down. . . . One can't help feeling sorry for the poor devils on board; they were very nice fellows, and we have done all we can for them, and I must say they put up a most gallant fight considering the odds against them. Our ships are practically undamaged, and we should have finished the action much sooner if we had got closer to them, but, of course, our object was to sink them with as little damage to ourselves as possible.

"One of the officers saved was telling me that towards the end of the action he could not get along their upper deck, as they practically had none left; nearly every man on the upper deck had been killed, all the guns were out of action, and one turret had been blown bodily overboard by 12-inch lyddite shell. Both their engines were broken up, and they had a fire in the after part of the ship. They would probably have had many more fires, but our shells striking the water near the ship sent up columns of water, which kept on putting out the fires. The spouts of water sent up by our shells hitting the water near them went up about half as high again as their mastheads, probably about 300 feet.

"The German sailors, when they got on board, expected to be shot, and were very agreeably surprised when they found they would be looked after decently instead."

VI

AN ADMIRAL'S FIRST COUSIN AMONG THE GERMANS RESCUED

THE *Carnarvon's* midshipman tells a very interesting story of the rescue of German sailors from icy water of the South Atlantic after the battle:

"One of the officers saved was a first cousin of our Admiral's (Stoddart). He is a strong chap and quite a good fellow. He had an extraordinary experience. Half the *Gneisenau's* men were killed by shell-fire alone. He was in an 8.2 turret as second torpedo officer. The turret was knocked out, and he was the sole survivor. He then went to a casemate gun, which was also knocked out and practically all the crew killed. He went to a third, another

casemate, which was also knocked out, and he was again practically the sole survivor. He went to another gun, and the ship was then sunk. He remained in icy water for nearly one and a quarter hours, and was picked up by one of our cutters. He was rather dazed, but cool and collected in the boat. After lying shivering in the bottom of a cutter for half an hour he was hauled up by a bow-line into one of his enemy's ships. When he got on board he said: 'I believe I have a first cousin in one of your ships. His name is Stoddart.' Then to find him as Admiral in the ship that picked him up! He went into the Admiral's quarters and is now none the worse for his experience. It was a case of the survival of the fittest, and we picked up the pick of the bunch, fine strong men. . . . It was extraordinary to see the lack of animosity against us. We were very cheery saving them. It was a case of 'Buck up, old chap, you're all right,' etc. They said they did not want to fight us. We were glad to save such plucky foemen."

VII

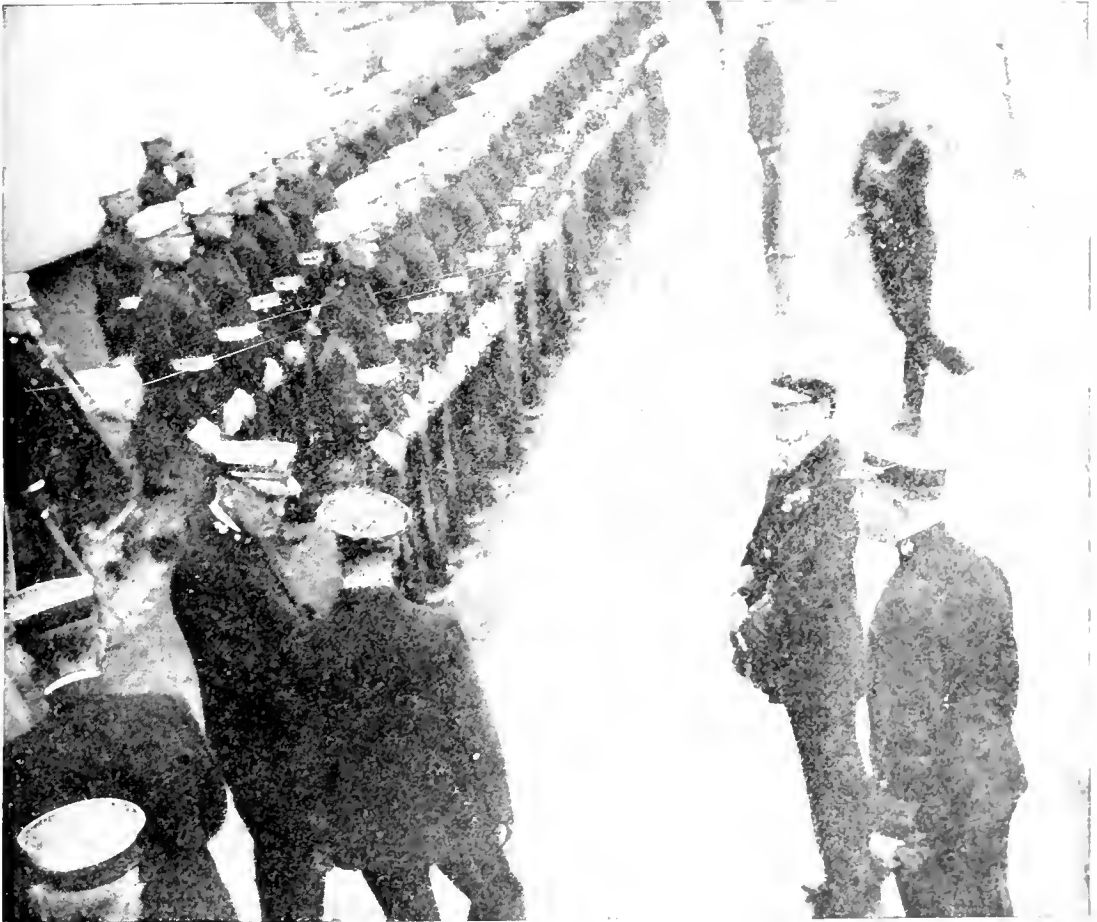
THE GHOST SHIP

COMMANDER ERIC WHARTON, of the *Kent*, the British cruiser which overhauled and destroyed the *Nürnberg*, wrote an account of the action from which the following is taken:

"It is near dusk now, 7.30, and we have been two hours in action. Up comes every one from below, from casemates and turrets, to stare and rejoice, but they are all immediately hustled away to do what can be done to save life. All our boats are riddled, and none of them can be repaired for an hour. We do what we can with lifebuoys and lumps of wood paid astern, but it's mighty little; it's a lippy sea, and dreadfully cold. All this part was beastly. There were so many of them in sight, and we could do so little till our boats were patched. At last we could lower one cutter and the galley, and even then life-saving was no easy job. I was in the galley, and plunged about for twenty minutes to get one man. Altogether we got on board about a dozen, five of whom were really 'goners' when we hoisted them on board. The other seven have flourished and are really quite normal again now. Early in these life-saving operations the *Nürnberg* heeled over on her side and sank. They were a brave lot; one man stood aft and

held the ensign flying in his hands till the ship went under. It was strange and weird; all this aftermath, the wind rapidly arising from the westward, darkness closing in, one ship heaving to the swell, well battered, the foretop-gallant-mast gone. Of the other, nothing to be seen but floating wreckage, with here and there a

man clinging, and the 'Mollyhawks' (vultures of the sea) swooping by. The wind moaned, and death was on the air. Then, see! out of the mist loomed a great four-masted barque under full canvas. A great ghost-ship she seemed. Slowly, majestically she sailed by and vanished in the night."



World's War

Hunter.

King George Received on the Battleship *New York*

The King, accompanied by Admiral Sir David Beatty, visited the American dreadnought, and expressed the opinion that "in the American Navy the precept of cleanliness being next to godliness has been effectively adopted."

THE BRITISH FLEET IN THE NORTH SEA

General Strategy of the Naval Situation—Problem of the Blockade—The Two Naval Crises of the War—Jellicoe Reveals Britain's Lack of Base Defenses and Inferiority to Germany in Destroyers

I

THE North Sea was the key to the naval situation of the war and the chief area of naval activities. It was here that the main fleet of the enemy faced the main fleet of the Allies; and the security of Allied communications and Allied possessions from east to west and from pole to pole depended upon the ability of the Grand Fleet to contain the enemy High Sea Fleet in the North Sea. Had German naval strategy succeeded in overpowering the British fleet before the entry of the United States in the war, the Allied cause would have been lost and the triumph of the enemy assured.

In considering the strategy of the North Sea it is essential to keep in mind that here the issue of the war was constantly at stake. On land, armies numbered in millions were shattered; Belgium, Serbia, Rumania, and Russia—entire nations—were conquered; still the enemy could not and did not achieve victory. On the other hand, had the British fleet been overcome in the one battle of Jutland, the Allies would have been shorn of their power and the war lords of Germany could have attained their utmost aims.

In main features the strategy employed both by England and Germany in the North Sea followed normal lines; but the subject has been considerably confused and obscured. Throughout the war, for strategic and political reasons, naval operations were shrouded in official secrecy. Misinforming rumors were current; inspired articles appeared in the press of both belligerents for propaganda purposes; and, finally, controversies have been exploited by so-called naval experts. It is not surprising that strange heresies on the subject of Sea Power have been aired both in Great Britain and in America. These are dispelled, how-

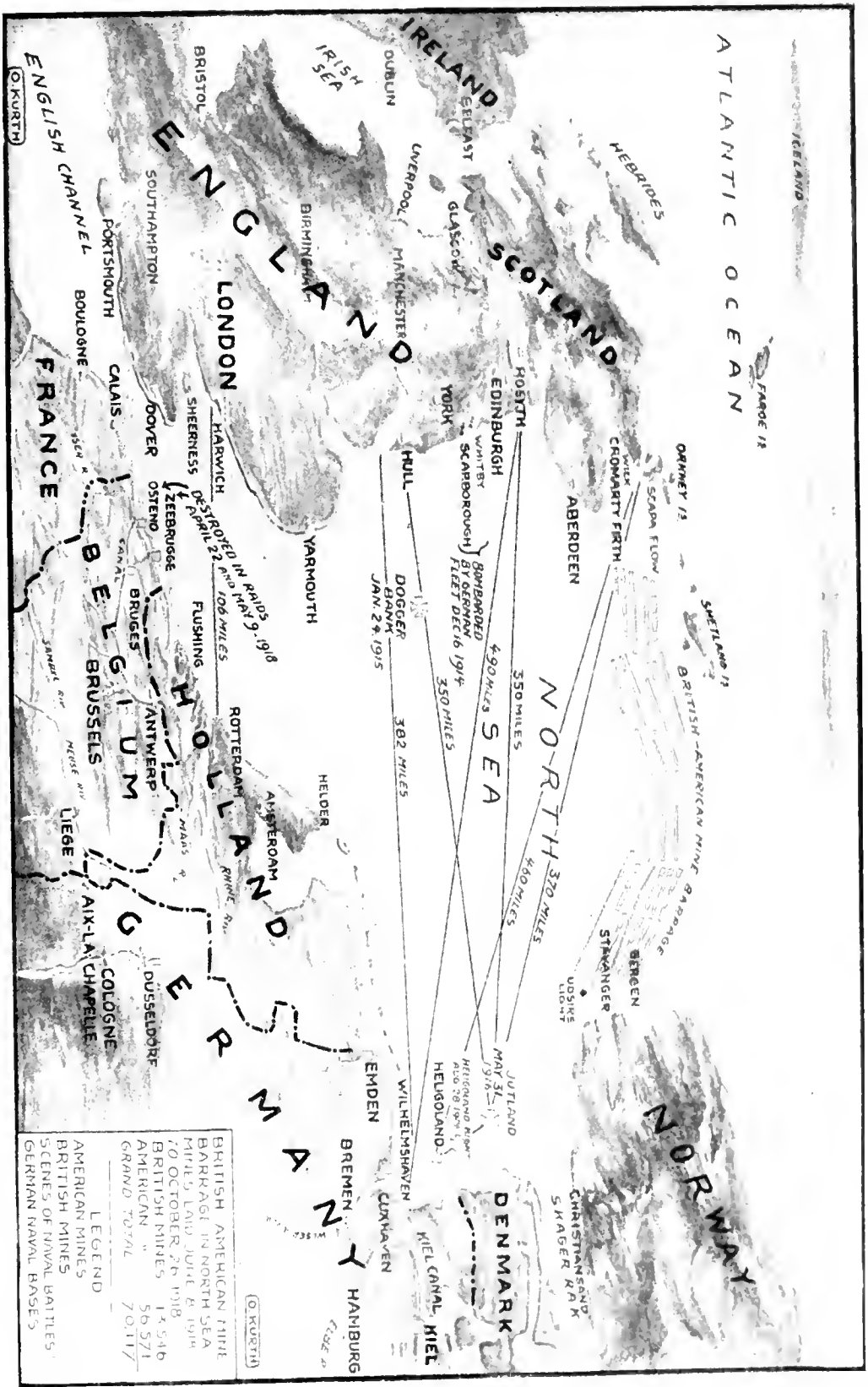
ever, by a consideration of facts in their relation to established principles.

The quickest, surest, and most effective way to gain control of the sea is to destroy the enemy naval forces. It has been the experience of history, however, that the weaker naval adversary usually keeps his main fleet on the defensive in safeguarded waters until compelled to go forth and fight. Under the circumstances of this war it would have been folly for the greatly inferior German fleet to have risked complete destruction in an immediate engagement with the British Grand Fleet. Modern weapons make an alert defensive naval strategy particularly advantageous, and, also, the somewhat restricted waters of Europe favor the use of the mine and torpedo in tactics of attrition against the superior containing fleets. The strategy of Germany, therefore, was to maintain her High Sea Fleet as a continual menace; to hold the enemy at a distance; to protect her littoral; to blockade Russian Baltic ports; to keep open sea communications, and by mine, torpedo, and raids to wear down the opposing fleet until it could be engaged under conditions of parity.

WHY THE BRITISH COULD NOT MAINTAIN A CLOSE BLOCKADE

Long before the war it was seen that modern weapons made a close blockade by the superior naval power impracticable, as long as the enemy, although inferior, still possessed a powerful battle fleet. Germany was known to be expert in the use of mines and torpedoes, and behind the Heligoland fortress was the High Sea Fleet, ready to launch a sudden attack at a propitious moment. Capital ships could not safely cruise in the vicinity of enemy bases unless in sufficient force to be constantly

ATLANTIC OCEAN



Perspective Map Showing the Location of the North Sea Mine Barrage, the Scene of the Principal Naval Actions, and the German Naval Bases

ready to meet this attack. Even then, it would be playing into the hands of the enemy continually to expose dreadnoughts to mines and torpedoes.

The blockading fleet must be on guard at all points at all times, while the enemy can select the time and place for his concentrated attack. The menace of submarines and destroyers, especially at night and in thick weather, makes it unwise for capital ships to attempt keeping regular cruising stations off an enemy coast. Destroyers and light cruisers alone, although in less danger from mines and torpedoes, cannot maintain a close blockade without support in force, because the more powerful enemy squadrons can drive them off or destroy them.

Manifestly it was not practicable for the Grand Fleet to maintain itself at sea, day in and day out, always ready to meet a concentrated attack at the enemy's selected time and place. Ships cruising off a distant coast require periodical reliefs for replenishment of fuel and to effect necessary repairs. As long as the High Sea Fleet was in fighting trim and to be reckoned with, to establish an effective close blockade would have required a much greater number of ships of all classes than was available, and would have involved an almost prohibitive risk and expense. The strategy of the British Navy, therefore, was to institute a watching policy from a distance; to guard the entrances to the North Sea; to hold the Grand Fleet in readiness to intercept the High Sea Fleet should it venture out; to drive back or destroy any enemy raiding expedition, before England could be invaded or any serious damage done; and by frequent sweeping operations conducted in force, to assert naval supremacy in the North Sea and to endeavor to entice the enemy to give battle.

TWO NAVAL CRISES

To a certain extent the strategy of both belligerents was successful. Neither side won a decisive victory, and the general naval situation at the time of the armistice was not very different from what it was at the beginning of the war. In the conflict at sea, however, there were two conspicuous crises fraught with potentialities. In one, the submarine crisis, Germany almost had victory within her grasp: Allied naval control was

temporarily jeopardized by the introduction of unlimited submarine warfare against commerce, and German naval power came perilously near to enabling the enemy armies to gain a victorious decision. Fortunately, the Allied navies developed successful counter-measures in time to prevent this catastrophe. On the other hand, in the other crisis, at Jutland, it was the Allies who were, apparently, on the verge of achieving a great success. Off Jutland, on May 31, 1916, the British Grand Fleet and the German High Sea Fleet met, but unfavorable weather conditions intervened and the ensuing action was indecisive. Had the British won a decisive victory at Jutland, the submarine crisis would have been obviated and the way opened to the Allies for bringing the war to a speedy conclusion.

It has been a more or less prevalent fallacy that German naval power has taken no important part in the war, that had Germany possessed no battleship fleet, the war would still have followed much the same course. A little seasoned reflection, however, will expose this fallacy and show the essential part assigned to the High Sea Fleet in the German war plan. Its chief function was to protect the German rear and flanks. Had it not been for the High Sea Fleet, a close blockade of the German coasts could have been effected; mine-sweepers and anti-submarine craft, covered by the guns of the Grand Fleet, could have operated up to the range of the German coast defenses and no doubt could have frequently run by them under cover of night or thick weather; Allied mine layers and submarines supported by destroyers, cruisers and capital ships could have quickly sealed the enemy ports; a British squadron could have steamed into the Baltic, raised the blockade of Russia's Baltic ports and threatened Germany with an expedition from the North. The moral effect alone would have been tremendous and possibly decisive. At the battle of Jutland, therefore, the war hung in the balance and it can be safely asserted that had the High Sea Fleet been destroyed a victorious peace would have been brought within definite reach. On the other hand, had a great disaster befallen the British Fleet, the bulwark of the Allied cause would have been knocked from under.

JELlicoe TAKES COMMAND

In December, 1912, Admiral Sir John Jellicoe had been assigned duty as Second Sea Lord at the Admiralty in London and remained there until July 30, 1914, the eve of the war, when he was relieved by Vice Admiral Sir Frederick Hamilton and proceeded to the Grand Fleet, taking command August 5, 1915, relieving Admiral Sir George Callaghan, who had had command since 1910, the usual term of two years having been extended in his case to three. That Admiral Jellicoe should be the next Commander-in-Chief had been decided early in 1914, although in the ordinary course of events Admiral Callaghan's term would not have expired until December. In the latter part of July Winston Churchill, the First Sea Lord, informed them that in the event of hostilities occurring involving England it was considered necessary that the Commander-in-Chief should have the assistance of a second in command, for which appointment Admiral Jellicoe had been selected, but on July 28th, he had no premonition of the coming events which were to make him chief in command on August 5th.

It was on July 31st, after being relieved of his duties as Second Sea Lord, that Mr. Churchill intimated to Admiral Jellicoe that under certain circumstances he might be appointed Commander-in-Chief in succession to Sir George Callaghan. Admiral Jellicoe states in his book, *The Grand Fleet: 1914-1916*, that this came as a great surprise and that he protested against making this change on the eve of war. In his published memoirs, the Admiral writes in part:

"When I reported myself to the Commander-in-Chief, the knowledge of the event which was apparently pending made the interview both embarrassing and painful, as I could see that he had no knowledge of the possibility of his leaving the fleet and obviously I could not tell him. At about 4:00 a. m. on August 4th I received Admiralty orders to open a secret envelope which had been handed to me in the train as I was leaving London, by an Officer from the Admiralty. The envelope contained my appointment as 'Commander-in-Chief of the Grand Fleet'—a new designation which must be explained later. I proceeded on board the *Iron Duke* and found that the Commander-in-Chief had received orders to turn over the command to me.

"It was decided that I should take over the command on the following day, but a telegram having been received from the Admiralty ordering the fleet to proceed to sea at once, I returned to the *Iron Duke* and Sir George Callaghan arranged to leave the fleet in the *Sapho* before its departure at 8:30 in the morning.

"At that hour I took over the command from Sir George Callaghan, who then struck his flag.

"The following 10 or 14 days were a period of great strain and anxiety. To assume so heavy a responsibility as the Command of the Grand Fleet at such short notice on the eve of war was in itself a matter not to be taken lightly. It became necessary to gather together the strings of the whole organization, to ascertain the dispositions already made and those immediately required, and the whole problem was largely complicated by the fact that the port on which the fleet was based was open to attack both by destroyers and submarines, the only obstacle to such an attack being the navigation difficulty of the Pentland Firth. Though considerable, these were by no means insuperable."

LIKE A MIGHTY GAME OF CHESS

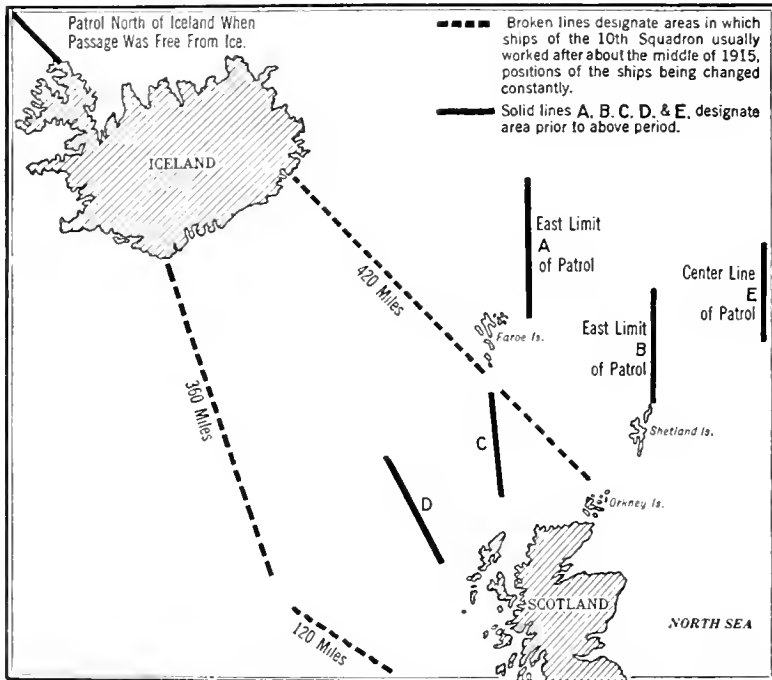
In following the naval operations in the North Sea it is important to study the accompanying charts to fix in mind a few outstanding geographical features and obtain a general idea of localities and distances. It was in this comparatively small area of 120,000 square miles that the opposing naval chiefs

were constantly engaged in a great contest. Strategic moves were made with the two most powerful fleets in the world pitted against each other and the issue of a struggle involving five continents hinged on the outcome. It may be compared to a mighty game of chess, the most valuable pieces being the dreadnoughts, next the cruisers, then the destroyers, submarines, mine layers, other auxiliaries,

It was soon discovered that German submarines possessed a radius of action and sea-keeping qualities superior to those of British submarines. This, coupled with energetic and unscrupulous enemy mine-laying operations, caused the British battle-fleet to confine its movements, under ordinary conditions, to the more northern waters, while certain cruiser patrol areas were established in the center of the North Sea. These northern waters were safer from submarines because more distant from the enemy bases, and also safer from

THE GRAND FLEET MOVES TO THE NORTH

This general policy of controlling the North Sea was continued until the attack on the *Theseus* and loss of the *Hawke* by submarines on October 15, 1914, induced another move to the northward. It was considered too risky for the larger cruisers unattended by destroyers to work in the central part of the North Sea and they were assigned safer patrol beats to the northward and eastward of the Shetland Islands. The battle-fleet took



Redrawn from chart in *The Grand Fleet: 1914-1916* (Doran).

Patrol Areas of Scout Cruisers in the More Northern Latitudes

mines because of the great depth of water. Southern sweeps in force were carried out at irregular intervals. During these, mine sweepers sometimes preceded the battleships and, also as a precaution against mines, the practice was adopted of using old pre-dreadnought battleships as column leaders to serve as mine bumpers for the more valuable dreadnoughts. As an example of these periodic sweeps the one made by the Grand Fleet on September 8 to 11, 1914, is charted on page 89.

In addition to these fleet sweeps, cruiser detachments made more frequent excursions.

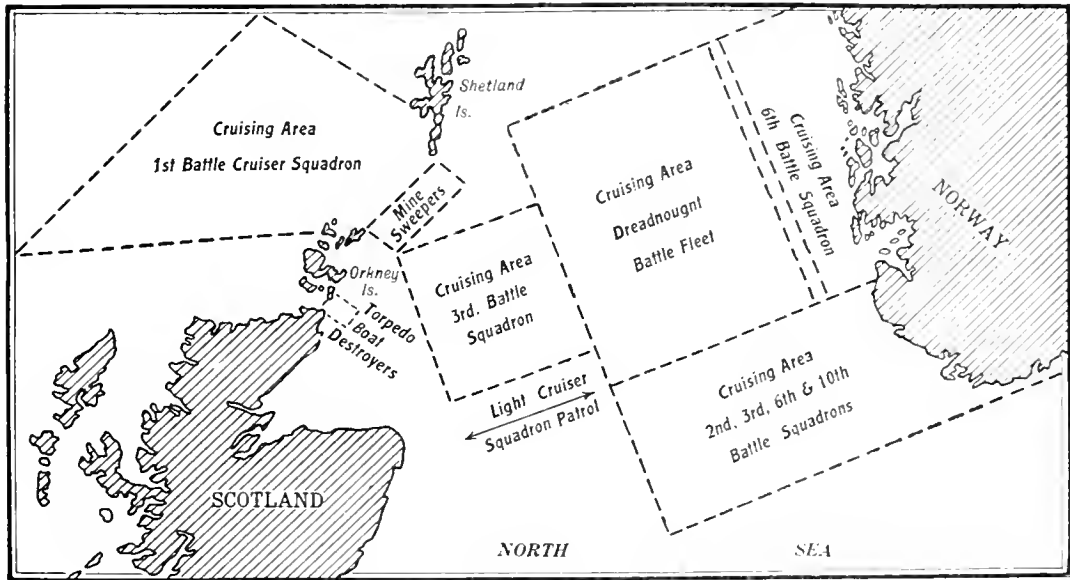
up its supporting position to the westward of the Orkneys, or cruised to the north and east of the Shetland Islands when the cruiser patrols were working further to the southward. The battleships thus served as a second blockade line which was particularly necessary during the early months of the war before an adequate number of converted steamers had been assigned to blockade the northern entrances.

After the middle of the year 1915, as the menace of mine and submarine increased, the patrolling vessels were withdrawn still further, and lines established to the northwest-

ward of Scotland and the Orkneys, blocking the north-about steamer route on the line to Iceland. This latter system is indicated by the dotted lines on the accompanying chart, while the previous patrol lines worked before the middle of the year 1915 are shown by the full lines marked A, B, C, D, and E. The interval between the patrol lines was regulated by the distance steamers could travel during the dark hours so that ships which might slip by one line in the night would be intercepted by the other during the daylight.

It is thus seen that North Sea was a disputed area. The major portion was con-

German battle-cruiser squadron. Great Britain anticipated these raids and early in the war established an advanced base at Rosyth for the battle-cruiser force under command of Admiral Beatty with attending light cruisers and destroyers. From this port Beatty cruised into the North Sea, working as an advanced force of the Grand Fleet whenever the latter was engaged in sweeping operations. This disposition was not a violation of the principle of concentration because the superior speed of the British battle-cruisers gave them the option of engaging on their own terms, and they always operated on interior lines—that is, in



Redrawn from chart No. 724-970 (Durant)

Chart to Illustrate Naval Protection to a Canadian Convoy

trolled by the superior British fleet, but the enemy High Sea Fleet exercised control in a smaller area in the vicinity of German bases. In between these two areas there was a "No Man's Land," wherein neither side exercised continual control. Throughout the war the opposing fleets and raiding detachments made excursions into "No Man's Land" and also into enemy controlled waters. The two navies constantly engaged in strategic maneuvers seeking advantageous opportunity to strike.

It was part of German strategy to institute raids against enemy coasts, and while the light forces at Harwich could successfully counter the light forces of the enemy, they were not strong enough to defeat the fast

such relation to the Grand Fleet as to insure a junction before a general engagement could take place.

After the destruction of Admiral von Spee's forces off the Falkland Islands, and after Germany had begun to feel the loss of her overseas trade and shipping, the German Staff decided that something had to be done at sea to strengthen morale at home and to shake the confidence in British sea power abroad. A naval raid was planned against British towns on the eastern coast of England. An additional objective of this raid was to induce a division of the Grand Fleet, thereby increasing the likelihood that a detachment might be cut off at some time by a superior German

force and destroyed before reinforcements could arrive. Although no conspicuous success resulted from this strategy, it was not entirely barren of influence on the military situation.

On December 16, 1914, the battle-cruiser squadron under von Hipper bombarded Scarborough, Hartlepool and Whitby and did considerable damage, killing 99 people. Although the British fleet was at sea and in good position to intercept the returning raiders, the latter succeeded in returning to their base under cover of thick weather without being engaged. Another raid—the Dogger Bank affair—was attempted on January 24, 1915, by this same force. This time, however, Admiral Beatty's squadron intercepted them at sea and in a running fight the German armored cruiser *Blücher* was sunk. (For a detailed account of the raids and of the Dogger Bank encounter see page 246 of this volume.)

In addition to enemy raids there was another contingency which British strategy took into consideration. This was the possibility of invasion by an expeditionary force. When the nights were short and a large army still in England, it was not felt likely that Germany would attempt such an invasion, but during the long winter nights and while England had a comparatively small military force at home the menace of such an invasion was sufficient to induce the Admiralty to order the Third Battle Squadron of eight pre-dreadnoughts and the Third Cruiser Squadron of four cruisers together with destroyers for screening purposes also to base at Rosyth. At this time three battle-cruisers were in the Atlantic operating against von Spee's squadron, and Admiral Jellicoe states that this division of the Grand Fleet, "however necessary, had certain disadvantages from a strategic point of view. The eventuality that had then to be faced was that of the remainder of the Grand Fleet having to engage the High Sea Fleet, since concentration with the Third Battle Squadron could probably not be effected without the risk of losing the opportunity of engaging."

Near the end of the second year of the war, after the cruiser raid of April 25, 1916, against Lowestoft, the Third Battle Squadron and Third Cruiser Squadron were further advanced to the southward as a safe-

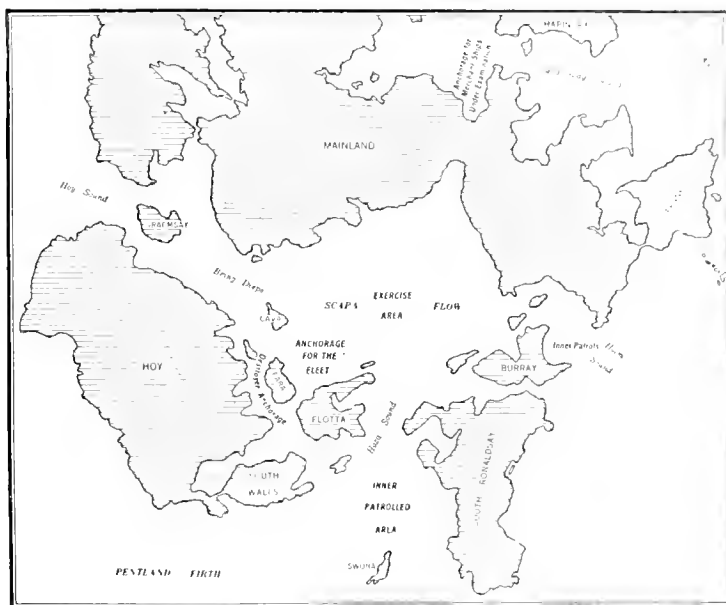
guard against invasion and based in the Humber, the nearest suitable British base to Heligoland. At this time, however, new units had been added to the Grand Fleet and capital ships previously absent on foreign stations had rejoined. These made the all dreadnought battle-fleet so superior in strength to the High Sea Fleet as to relieve the Commander-in-Chief of the anxiety he had felt earlier in the war concerning the eventuality of having to engage without the Third Battle Squadron in line.

GUARDING THE TROOP TRANSPORTS

Still another factor which entered into the strategy of the North Sea was the question of covering troop transport operations against an attack in force, and the Grand Fleet kept at sea as much as possible during large troop transport movements. As an example, there is shown on the chart, page 91, the dispositions made October 3 to 11, 1914, while a Canadian convoy was crossing. It is to be noted that for this particular mission the First Battle Cruiser Squadron was assigned an area north of Scotland and west of the Orkneys and Shetland Islands instead of southward of the battle-fleet as was the usual disposition of this advance force.

Logistics was an important element in the strategy governing the movements of the British naval forces. The supply of fuel, especially for destroyers and light cruisers, was an important problem, since their cruising radius was much less than that of the battle-ships. As the number of destroyers available for screening purposes was inadequate to provide reliefs, the Commander-in-Chief had the alternative of either doing without his destroyers for a part of the time, or of keeping the capital ships in port while the destroyers were refueling. The procedure adopted appears to have been a compromise. Careful planning was necessary to assure that any moment selected by Germany for a sortie would not catch the Grand Fleet at a disadvantage due to the absence of the destroyers and light cruisers for purposes of refit and refueling.

In addition to the bases already mentioned at Scapa Flow, Rosyth, Harwich, and in the Channel, other subsidiary bases were employed by the fleet. Chief of these were:



Scapa Flow and Neighboring Islands

It was here that the British Grand Fleet made its base. According to Jellicoe, it was defenseless and could easily have been destroyed by the enemy. These waters were the scene of the surrender of the German Fleet.

Cromarty, for docking and repair work, situated in the northeast of Scotland; Loch Ewe, in the northwest of Scotland, and Lough Swilly, in the north of Ireland. This latter base was temporarily used by the Grand Fleet while adequate submarine defenses were being constructed at Scapa Flow.

II

JELlicOE ON BRITAIN'S NAVAL WEAKNESS

AT the outbreak of the war it appears that the British Navy was far behind in the tactical development of the mine and to an astonishing degree unprepared in the defense of harbors and bases against under-water attack. On this subject the following excerpt from Admiral Jellicoe's book, *The Grand Fleet: 1914-1916* (Doran), is of interest:

"As is well known, the Grand Fleet was moved to Scapa Flow during the latter days of July, 1914, and the defenseless condition of the base, both against destroyer attack and submarine attack, was brought very strongly into

prominence by the presence of so valuable a fleet at this base.

"The anchorage known as Scapa Flow has three main entrances navigable by all ships, the Hoxa, the Switha, and Hoy Channels, and, in addition, has some more narrow, shallow and tortuous entrances on the eastern side, the main one being Holm Sound. The question of providing gun defenses for this base, which the Admiralty had decided a year or two before the war was to be the main fleet base, had been discussed on more than one occasion, after examination by a committee of officers on the spot; but, since finance governs defense, and the Admiralty from year to year had insufficient money for even more urgent needs, no action had been taken. Scapa Flow lies some 450 miles from the German naval bases, and was, therefore, open to an attack by enemy's destroyer flotillas as well as, of course, by submarines. Its main, indeed its only, safety against such attacks by submarines lay in the navigational difficulties attendant upon entry into the harbor, combined, as regards destroyer attacks, with the possibility of an enemy's force being intercepted on its outward or homeward passage, or of its being successfully engaged in the vicinity of the base. The sailing directions laid great stress upon the difficulties of naviga-

tion in the approaches to this base, due to the very strong and varying currents, but the Germans were well acquainted with the Orkney and Shetland Islands. They had indeed made it a practice to send ships to visit these islands fairly frequently before the war, and they were, therefore, as well able to judge of the difficulties of entry into Scapa Flow as we were; and seeing that we used it as a main fleet base, they could deduce the fact, if they did not know it already, that the difficulties of entry were not insuperable.

DEFENSE AGAINST GERMAN DESTROYERS

"Sir George Callaghan, under these conditions, on the arrival of the fleet at Scapa Flow at the end of July, took immediate steps, with the resources at his disposal in the fleet, to improvise defenses for the base against destroyer attack. All that he could do was to land some 12-pounder guns from the ships of the fleet and mount them at the entrances. No searchlights could, however, be provided, so that the guns were not of much value at night. Arrangements were also made for placing light cruisers and destroyers at the various entrances to assist these defenses. The further step, of course, was taken when the fleet was present at the base of placing patrols to the eastward of the Pentland Firth. It was not felt in the fleet, however, that these measures gave much security even against destroyer attack on a dark night, and it gave no security whatever against submarine attack. Nothing but *obstructions* of some kind could give that security. The matter was frequently discussed. Although many brains had been at work, no satisfactory anti-submarine obstruction had been devised. Under the urgent pressure of war the solution was found. The conclusion generally held by experienced submarine officers was that, whilst the least important entrances, such as the Hoy, the Switha and the Holm Sound Channels, would be extremely difficult for the passage of a submarine, entry by the Hoxa Sound Channel was quite practicable by a determined submarine officer. So much for the base at Scapa Flow.

"At Cromarty the conditions were somewhat better. The only entrance to this base is comparatively narrow, and was defended against the entry of destroyers and larger vessels by guns, which had been mounted by the Admiralty before war broke out. There was, however, no boom protection against the entry of destroyers, and the conditions in regard to submarine attack were the same as at Scapa Flow, there being no obstructions.

"At Rosyth the same conditions prevailed as at Cromarty, namely, the harbor was defended by guns only against attack by destroyers. In this case, the guns were manned by the military, and not by Marines, as at Cromarty; again the harbor was quite open to submarine attack.

ANXIOUS HOURS AT SCAPA FLOW

"Consequently, the anxiety of officers in command of fleets or squadrons at anchor in any of the bases used by the Grand Fleet was immense. For my part, I was always far more concerned for the safety of the fleet when it was at anchor in Scapa Flow during the exceedingly brief periods which were spent there for coaling in the early days of the war, than I was when the fleet was at sea, and this anxiety was reflected in the very short time that the fleet was kept in harbor. It was also the cause of my taking the fleet to sea very hurriedly on more than one occasion owing to the reported presence of a submarine in the anchorage, and considerable risks were accepted in getting the fleet to sea in very thick weather at night on at least one of these occasions.

"I have often wondered why the Germans did not make greater efforts to reduce our strength in capital ships by destroyer or submarine attacks on our bases in those early days. They possessed, in comparison with the uses for which they were required, almost a superfluity of destroyers, certainly a superfluity as compared with ourselves, and they could not have put them to a better use than in an attack on Scapa Flow during the early months of the 1914-1915 winter.

"In August, 1914, Germany had 96 destroyers in home waters fit for such an operation, all with a speed of, or exceeding, 30 knots, this number being in addition to a total of 48 more destroyers, rather smaller and with speeds varying between 26 and 30 knots, which were quite fit for work in the Baltic or in the vicinity of German bases in the North Sea.

"This country had in home waters at the same period only 76 destroyers that could be compared with the German vessels in view of modern requirements, and 33 of these had a speed of only 27 knots. Of the 76 destroyers, 40 were allotted to the Grand Fleet proper, the remaining 36 being based on Harwich. We had in addition 11 large and fast destroyers of the *Tribal* class which, owing to their small fuel capacity, were only of use in southern waters and were appropriated to Dover. And we possessed 25 destroyers of the *River* class, of a



Photo by Hunter.

Admiral Sims and Admiral Rodman "Talking it Over"

The quarterdeck of the *New York*, while the American battle squadron was cooperating with the British Grand Fleet.

nominal speed of only 25 knots, as well as the old 30-knot destroyer; the latter class was only fit for patrol work in the vicinity of the English coast.

WHY BRITISH FLEET DID NOT ATTACK THE ENEMY

"It may be said that similar reflections to those I have mentioned might be made by the Germans as regards our own movements, and that they were surprised that we did not attack their fleet at anchor. The answer is obvious to those aware of the conditions. We were very short of destroyers for fleet work, and we were well aware of the thoroughness of the defenses of the German naval bases. We knew that they not only possessed the most powerful and ample artillery defenses, but we knew also that the Germans had a very efficient mining service, and we were justified in assuming that they had protected their naval bases by extensive minefields. We, on the other hand, were entirely unprovided with this particular form of defense.

"In view of the known quality of German artillery and mine defenses and the thorough nature of their organization, my own view was that they also possessed, in all probability, anti-submarine defenses. For these reasons, together with the important fact that the German rivers are so shallow that our submarines could not enter them in a submerged condition, it appeared to me that an attack on their ships in harbor would meet with no success, and that we could not afford to expend any of our exceedingly limited number of destroyers, or submarines, in making an attack which would, in all human probability, be foredoomed to failure. Later knowledge of the German defenses proved the correctness of this view. I can only imagine that the Germans credited us, also, with possessing harbor defenses and obstructions which in our case were non-existent, although we did our best in the fleet to give the impression that we had obstructed the entrances, for, pending the provision of proper obstructions, we improvised various contrivances. It may have seemed impossible to the German mind that we should place our fleet, on which the Empire depended for its very existence, in a position where it was open to submarine or destroyer attack.

"This view, however, did not relieve the minds of those responsible for the safety of our fleet from the gravest anxiety whenever the more valuable ships were in the undefended harbors.

THE TWO FLEETS COMPARED

"A comparison of numbers between the Grand Fleet and the High Sea Fleet in the early part of the war shows the following figures. Only ships that had completed their training and were fit to fight in the line are included:

BATTLESHIPS: B. BRITISH, G. GERMAN

Date	Dread-noughts	Pre-Dread-noughts	Battle cruisers	Light cruisers	Destroyers	Airships	Cruisers
August 4, 1914							
B.	20	8	4	12	42	—	9
G.	13	16	3	15	88	1	2
October 1, 1914							
B.	20	12	6	12	42	—	10
G.	15	16	3	14	88	3	2
January 1, 1915							
B.	21*	8	6	17	44	—	14
G.	16	16	4	12	88	6	1
April 1, 1915							
B.	23	8	9	18	51	—	17
G.	17	16	4	14	88	6	—
October 1, 1915							
B.	25	10	10	25	66	—	15
G.	17	16	4	15	88	12	—

* 21 completed, but two of these (*Monarch* and *Conqueror*) were seriously damaged and one other battleship was refitting.

"The above list gives the vessels nominally available.

"In comparisons of the strength at Germany's *selected* and our *average* moment, the following facts should be remembered, and were necessarily taken into account by me at the time:

"(a) We usually had at least two battleships, one or two light cruisers, six destroyers, one or two cruisers, and perhaps one battle cruiser under refit, in addition to any other vessels that might be temporarily disabled.

"(b) Germany would see to it that none of her ships was refitting when planning an operation, and she could reinforce her fleet by several light cruisers and two or more flotillas of destroyers from the Baltic.

"(c) The pre-Dreadnoughts were not a very important factor on either side owing to inferiority of speed, and, in the case of our ships, the comparatively short range of their guns, due to the small amount of elevation of which their mountings admitted.

"(d) The German Zeppelins, as their numbers increased, were of great assistance to the enemy for scouting, each one being, in *favorable weather*, equal to at least two light cruisers for such a purpose.

"(e) Account is not taken in the British figures of the Harwich force, as this force could

not be counted upon to effect concentration with the remainder of the Grand Fleet at the German selected moment.

"(f) The British cruisers, not being very modern, lacked the speed necessary for efficiency as scouts. They were very slightly faster than the battleships of the 'Dreadnought' type, and, owing to their lack of speed, they were awkwardly placed if they came within range of an enemy Battle Squadron or Battle Cruiser Squadron. On the other hand, they were very superior in fighting qualities to the German light cruisers.

"It will be seen from the above statements that the enemy had by far his best opportunity from the naval point of view in the early months of the war, as he was then much nearer equality

of strength with the Grand Fleet than at any later period. A carefully laid trap, which included minefields and submarines, with the High Sea Fleet as a bait, might have been very effective at any period of the war in inflicting considerable losses on us. The Germans had their best opportunities between November, 1914, and February, 1915. After April, 1915, the situation got steadily worse for the enemy.

"The lesson of vital importance to be drawn from this review of relative naval strength, is that if this country in the future decides to rely for safety against raids or invasion on the fleet alone, it is essential that we should possess a considerably greater margin of superiority over a possible enemy *in all classes of vessels* than we did in August, 1914."

THE GRAND FLEET, AUGUST, 1914

MAIN BODY BASED AT SCAPA FLOW, ORKNEY ISLANDS

Fleet Flagship: *Iron Duke*.

First Battle Squadron: *Marlborough, St. Vincent, Vanguard, Colossus, Superb*.

Second Battle Squadron: *King George V., Orion, Ajax, Audacious, Centurion, Conqueror, Monarch, Thunderer*.

Third Battle Squadron: *King Edward VII., Hibernia, Commonwealth, Zealandia, Dominion, Africa, Britannia, Hindustan*.

Fourth Battle Squadron: *Dreadnought, Temeraire, Bellerophon*.

First Cruiser Squadron: *Lion, Princess Royal, Queen Mary, New Zealand*.

Second Cruiser Squadron: *Shannon, Achilles, Cochrane, Natal*.

Third Cruiser Squadron: *Antrim, Argyll, Devonshire, Roxburgh*.

First Light Cruiser Squadron: *Southampton, Birmingham, Lowestoft, Nottingham*.

DESTROYER FLOTILLAS

Second Flotilla: Flotilla leader *Active*, with 20 destroyers.

Fourth Flotilla: Flotilla leader *Swift*, with 20 destroyers.

MINE-SWEEPING GUNBOATS

Mine-sweeping gunboats: 7.

Shetland Patrol Force: 1 scout and 4 destroyers of the *River* class.

The above comprised the Grand Fleet at the outbreak of hostilities under the immediate orders of the Commander-in-Chief. In addition there were in southern waters under the command of the Commander-in-Chief the following vessels:

HARWICH DETACHMENT

(LIGHT FORCES BASED AT HARWICH)

The *Amethyst* (carrying the pennant of Commodore R. Y. Tyrwhitt).

First Destroyer Flotilla: Flotilla leader *Fearless*, with 20 destroyers.

Third Destroyer Flotilla: Flotilla leader *Amphion*, with 15 destroyers.

NOTE: It was intended that this Harwich force should join the Grand Fleet at sea in the event of a fleet action being imminent. Admiral Jellicoe states that the force did not, in actual fact, ever so join the fleet, nor did he expect that it would be able to do so.

THE SECOND FLEET

Included in the organization of the Home Fleets under the orders of the Commander-in-Chief were the Second and Third Fleets. These older ships did not all operate with the Grand Fleet, but constituted a reserve.

Second Fleet: *Lord Nelson* (Fleet flagship).

Fifth Battle Squadron: *Prince of Wales*, *Agamemnon*, *Bulwark*, *Formidable*, *Implacable*, *Irresistible*, *London*, *Queen*, *Venerable*.

Sixth Battle Squadron: *Russell*, *Cornwallis*, *Albemarle*, *Duncan*, *Exmouth*, *Vengeance*.

Fifth Cruiser Squadron: *Carnarvon*, *Falmouth*, *Liverpool*.

Sixth Cruiser Squadron: *Drake*, *Good Hope*, *King Alfred*, *Leviathan*.

NOTE: These last two cruiser squadrons were, however, broken up immediately, and the ships transferred to other duties.

Mine Layer Squadron: 7 mine layers.

THE THIRD FLEET

This fleet comprised the Seventh and Eighth Battle Squadrons, consisting of the oldest

battleships, and the Seventh, Ninth, Tenth, Eleventh, and Twelfth Cruiser Squadrons, comprising the oldest cruisers.

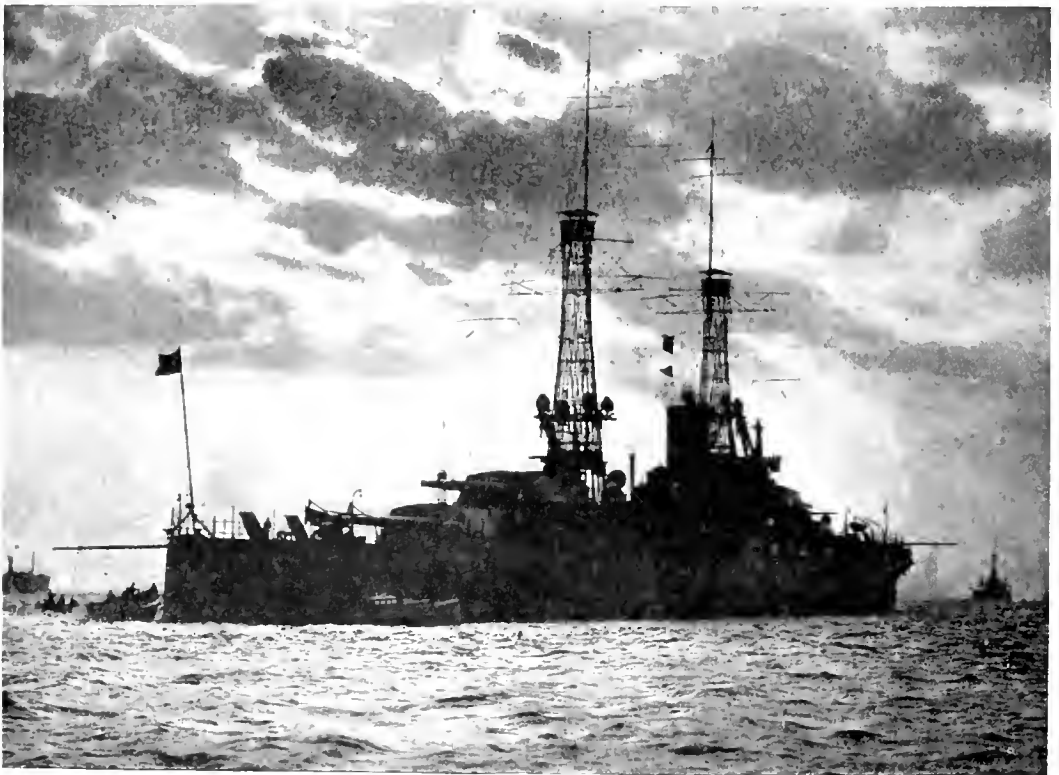
The only vessels of this fleet, however, associated at any time with the Grand Fleet were the ships of the Tenth Cruiser Squadron, employed mainly on blockading duties and composed as follows:

Crescent, *Edgar*, *Endymion*, *Gibraltar*, *Grafton*, *Hawke*, *Royal Arthur* and *Theseus*.

SUBMARINES

Submarines of the *B* and *C* classes were assigned to supplement the coast and harbor defenses from Rosyth southwards. These boats were unfit for overseas duty.

Submarines of the *D* and *E* classes operated from Harwich.



The Might of the Navy

Courtesy of Red Cross Magazine.

England has always claimed that the Navy was the nation's shield—her strongest protection against an enemy. The rivalry between the Army and Navy was never keener than during the World War. While each branch of the service in the Allied countries claimed the honor of winning the war, history will undoubtedly divide the honors between them.

THE BATTLE OF JUTLAND

The Greatest Naval Action of All History, Which Might Have Been Another Trafalgar, Ends Without Result

ON May 31, 1916, occurred the one great naval battle of the war, the battle of Jutland. In the measure of forces engaged, it is far and away the greatest naval battle in the history of the world; and yet it can never rank with Salamis, Actium, Lepanto, or Trafalgar, because it was indecisive. The situation after the battle was practically the same as it had been before. Because it was waged on so enormous a scale and because it raised so many points for debate it seems advisable to give an account of it in detail, in so far as possible in the words of the two British commanders, Jellicoe and Beatty. Reliable information from the German side is still lacking. Preliminary to the account of the specific actions, we may sketch the main outlines of the battle in order that they may not be obscured by the details.

While the British Grand Fleet was conducting one of its periodical sweeps across the North Sea, its advance force under Vice Admiral Beatty, consisting of six battle cruisers and four battleships with light cruisers and destroyers, came in touch with the advance force of the German High Sea Fleet, a squadron of five battle cruisers under Vice Admiral von Hipper, with its screen of light cruisers and destroyers, shortly before four in the afternoon.

Beatty turned southeast to cut the Germans off from their base; von Hipper turned in the same direction, and a running fight began at the great range of over nine miles. About 18 minutes after the fighting began, the British battle cruiser *Indefatigable* was destroyed by gun fire, and a few minutes later the *Queen Mary* suffered the same fate. Meanwhile, destroyer attacks had been carried out with great gallantry by both sides but without damage to the capital ships. This first phase lasted about an hour.

About 4:38 Beatty discovered that he was

running directly into the main body of the German Fleet (under Admiral von Scheer) and executed a turning movement, right about, to get back to the support of the British main fleet, or, as Beatty, in his report, says, "to lead them (the enemy's battle fleet) towards the Grand Fleet." In this phase the situation was reversed, the British advance squadron being pursued by the German advance squadron and the main fleet.

About six o'clock the British main fleet under Admiral Jellicoe arrived on the scene from the north. Upon this Beatty shifted his course eastward so as to cut across the head of the enemy's line and throw it into confusion. This maneuver Beatty carried out at top speed with his four remaining battle cruisers, his battleships being unable to keep up with him.

At this time three British battle cruisers, led by Rear Admiral Hood, in advance of the main fleet, were approaching Beatty at full speed on an opposite course. Due to a discrepancy in navigation Hood's detachment had passed too far to the southeastward and having heard gun-fire had turned and was approaching on a northwesterly course. In obedience to signals from Beatty, Hood executed a brilliant maneuver in turning his ships completely around, taking station directly ahead of Beatty in the *Lion*, and engaging the enemy at close range; but scarcely had he done so when the *Invincible*, flagship of Admiral Hood, went down just as the *Indefatigable* and *Queen Mary* had done earlier in the day.

GERMAN FLEET ESCAPES DURING THE NIGHT

Meanwhile, Admiral Jellicoe was forming his six divisions of battleships into line of battle. The Germans, realizing that they were opposed by an overwhelmingly superior force, turned east, then south, in an attempt to with-

draw. In this they were greatly assisted by the mist, the low-hanging smoke, and the gathering twilight. Ships were visible only at intervals and it was difficult to avoid mistaking friend for enemy. Shortly after seven the Germans made a determined torpedo attack with their destroyers. As conditions were ideal for the success of such an attack, Admiral



Admiral Sir John Jellicoe
Commander-in-Chief of the Grand Fleet.

Jellicoe swerved away to avoid it. The Germans, taking advantage of this respite, withdrew to the westward. In other words, after inflicting severe punishment upon a detachment of the enemy, von Scheer, when faced by a superior force, retired without heavy loss. It is to be noted that no damage was done to Jellicoe's battleships by enemy gunfire.

The British swung back again to their course of pursuit after the destroyer attack

had spent itself, but except for a few isolated encounters during the night, were unable to regain touch with the withdrawing Germans. Jellicoe finally called off the pursuit, and headed south towards Heligoland. At earliest dawn no enemy ships were visible, and it was ascertained by directional wireless that the Germans, headed for their base, were in the Horn Reef passage and inside their mine fields. Jellicoe then turned north, gathered his scattered units, and returned to his base.

The British lost three battle cruisers—*Queen Mary*, *Indefatigable* and *Invincible* (total tonnage, 63,000); three armored cruisers—*Defence*, *Black Prince*, and *Warrior* (total tonnage, 41,700), and eight destroyers—*Tipperary*, *Turbulent*, *Fortune*, *Sparrow*, *Hawk*, *Ardent*, *Nomad*, *Nestor* and *Shark* (tonnage, about 9,000). The loss in men was, for the battle cruisers, 2,640; for the armored cruisers, 2,163; for the destroyers, 560; a total of 5,363, by subsequent report brought up to 6,105.

The German statement of losses gives one battleship, *Pommern*, tonnage 13,040; one battle cruiser, *Lützow*, tonnage 28,000; two light cruisers, *Rostock*, tonnage 4,820, and *Frauenlob*, tonnage 2,650; and five destroyers. The German personnel reported lost, 2,414.

This in brief is the story of Jutland. The Germans immediately announced a victory over the British Fleet. The British, after a period of silence, also claimed a victory. Unquestionably, the German claim of having driven the Grand Fleet from the scene was groundless. The British moved in pursuit of the Germans and toward their bases; they retired only at nightfall when no enemy could be seen. On the other hand, the Germans had good reason to be elated. Their shooting had been superior, their ships had stood punishment far better than the British, they had, as Jellicoe frankly points out, better range-finding devices, better fire control, better searchlights, more torpedo tubes, a star shell invaluable for locating the enemy at night—points in which they had outstripped the British Navy. Moreover, they had met the entire British Fleet, which had a vast superiority in numbers, gun-power, and speed, and instead of being annihilated as they would have been on any war game-board, they had inflicted

twice as much damage in tonnage sunk as they had sustained and then escaped. Unquestionably, the results of Jutland were, morally, highly advantageous to the Germans.

MIGHT HAVE BEEN A TRAFALGAR

The situation was unchanged as far as it affected the control of the sea, but the vital fact remains that if the German Fleet had been destroyed the war would have had a very different history. Without the ships and men of the High Sea Fleet, the German mine-fields could have been swept clear to the very coast. The Baltic would have ceased to be a German lake, the blockade could have been drawn tight, and finally there could have been no submarine campaign; in short, the war might have been ended in favor of the Allies a year or two earlier at the least. Indeed it seems as if on May 31, 1916, the stage was set for a greater Trafalgar.

The fact that there was nothing remotely resembling a Trafalgar has given rise to sharp criticism of Admiral Jellicoe's tactics. This criticism centers round these points: *First*, it is alleged that the British battle approach was faulty and that Jellicoe formed line of battle on the division farthest away from the head of the enemy's line instead of on the division nearest to it, thus giving the Germans elbow room to turn away. Jellicoe replies that he was hampered by insufficient and conflicting information and that the maneuver suggested would have thrown his fleet into confusion favorable for an enemy destroyer attack, and would have blanketed his fire. *Second*, the charge is made that Jellicoe should not have turned away from the German destroyer attack of about seven o'clock, under cover of which the German Fleet broke away. Jellicoe replies that under the conditions of low visibility, it would have been suicidal for his ships to have headed into the streams of torpedoes directed against them. *Third*, he is criticized for not intercepting the enemy the next morning. The answer is not altogether clear, but it may be inferred that under the circumstances existing at daylight, Admiral Jellicoe was anxious to meet the enemy in the open sea but did not deem it wise, because of the menace of mine and torpedo traps, to seek an engagement on the terms selected by von Scheer in the Horn Reef passage. These seem to be the

main criticisms so far developed, but there are other, and perhaps equally important, tactical questions involved.

It will be many years before anyone will have the complete array of facts necessary to offer a definite conclusion on these points. Von Scheer unquestionably took full advantage of the mist and gathering darkness to withdraw his ships from an awkward predicament. On the other hand, Jellicoe bore a burden of responsibility so colossal that many will believe that his tactics were justified. Had the British lost in this battle their margin of superiority in ships, the whole Allied cause would have lost at a single throw, and those who argue for more aggressive taking of chances against torpedo attacks should bear this fact in mind. With a preponderance of light cruisers, heavy cruisers and destroyers, it is difficult to understand why close touch was not maintained with the enemy during the night. As was the case during the day, the scouts appear to have again failed Jellicoe at a critical time. For the present, until the facts have been gathered and sifted from the German sources as well as those of the British, it is only fair to suspend judgment.

THE NARRATIVE OF THE JUTLAND BATTLE IN DETAIL

IN this narrative of the principal events of the battle of Jutland, and the discussion of some of the points in strategy and tactics illustrated, it should be remembered that many details are lacking. Some of these details will be uncovered in the course of time, but many—having been lost in the sea along with the ships that went down—can only be matter for speculation.

The battle was fought between the British Grand Fleet and the German High Sea Fleet during the late afternoon and evening of May 31, 1916, with torpedo attacks continuing throughout the night. A decisive engagement was probably prevented by thick weather and approaching darkness, but hard blows were given and sustained on both sides.

It is a well-recognized experience of history that the public gauges the magnitude of a battle by the consequent changes in the political and military situation. At times a comparatively minor engagement between relatively

small forces wherein little actual fighting occurs will, if followed by a decided change in an international situation, assume in the public eye the proportions of a big battle. On the other hand, it sometimes occurs that a great battle, measured by the size and power of the forces involved and the actual fighting done, will, if indecisive and unproductive of changes in the *status quo*, appear, for the time



Admiral Sir David Beatty
Commander of the British advance force in the
battle of Jutland.

being at least, unimportant to the general public on both sides. It may be that the battle of Jutland is in this latter class. But, even so, when one considers the actual fighting done, and judges by the size, number, and various types of the ships engaged, their ability to maneuver, their power to give and their power to sustain hard blows, this battle was, as before stated, far and away the greatest the world has ever seen. Never before has there

been brought together such an array of fighting machines—dreadnoughts, battle cruisers, scout cruisers, destroyers, submarines, and aircraft. Moreover, it took intelligence, nerve, and endurance of the personnel to operate this powerful machinery under varying conditions of wind, sea, and weather. Assuredly it would seem that in this action and all that it exemplifies both in the ships engaged and in the requirements demanded of the personnel there must have been illustrated the best there is of naval art and naval science. It supplies an almost unlimited field for professional discussion and eventually is assured the prominent place in history that it deserves.

INFLUENCING CONDITIONS

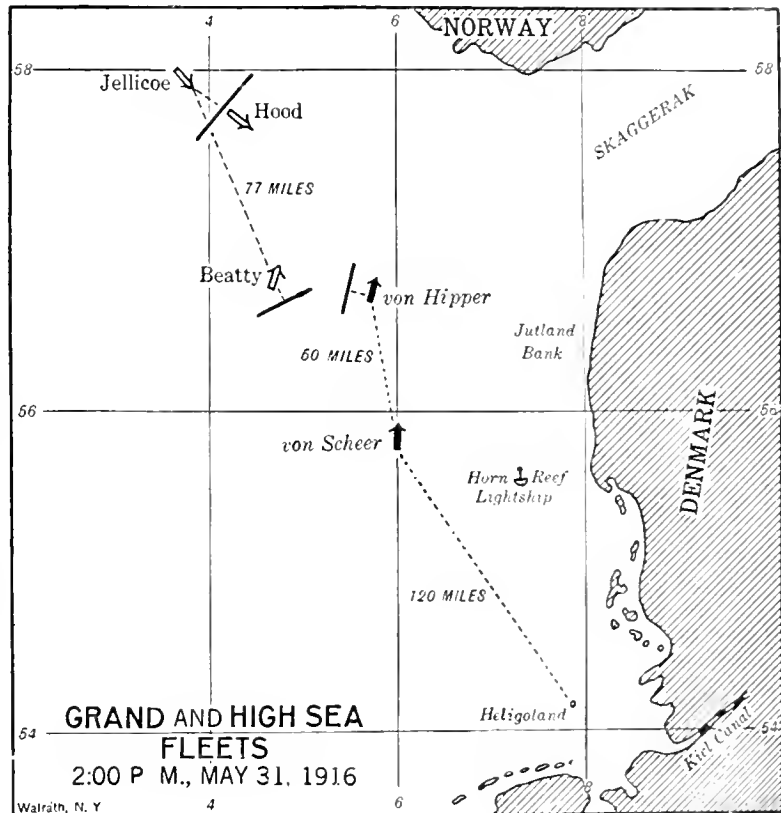
In the latter part of May, 1916, the general military situation was such as might have influenced Germany to seek a demonstration in the North Sea. The Verdun attack had not succeeded, and while the enemy General Staff did not, in all probability, feel any great anxiety as to conditions on the land frontiers, still the promise of victory made to the German people had not been realized. The pressure of the blockade, moreover, was becoming serious. Although the submarine campaign was in preparation, as yet no very great amount of merchant tonnage had been sunk and the vigorous protests of the United States had resulted in a diplomatic humiliation damaging to German prestige. Germany was not yet ready to defy openly the civilized world. In those circumstances, it was logical strategy for Admiral von Scheer, Commander-in-Chief of the High Sea Fleet, in order to strengthen national morale, to seek a naval success if it could be accomplished without too much risk. An additional enemy benefit, resulting from contact with British naval forces ending favorably to Germany, might be expected from a consequent increased effort to strengthen the Grand Fleet, thus facilitating the future work of the U-boats in that dock-yards would be kept busy on naval ships instead of on merchant ships, while the accentuated menace of the High Sea Fleet would, in all likelihood, induce a withdrawal of destroyers from the Atlantic side, leaving the submarines a clearer field to operate against commercial shipping.

In accordance with the previously explained

respective strategies of the opposing naval forces, both the Grand Fleet and the High Sea Fleet were cruising in the North Sea on May 31, 1916. The Grand Fleet was engaged in one of its periodical sweeps to the southward, and the German forces were making a similar excursion into "No Man's Waters" to the northward. Both fleets were seeking an advantageous opportunity to strike the enemy.

so much of the capital ship engagement as he wished, then turning away and interposing submarines, mines and destroyers whenever the superior British gun fire became too hot. Von Scheer probably felt confident that if Jellicoe pressed the engagement in such circumstances the High Sea Fleet would have an advantage giving fair prospects of inflicting considerable damage on the enemy.

DIAGRAM NO. 1. The positions of the British and German forces at 2:00 p.m. At this time neither side had any information concerning the other. It was not until 2:20 that the *Galatea*, the easternmost scout in the screen behind Beatty, sighted and reported the westernmost scout in the screen on the left flank of von Hipper. Beatty then turned to the southeast to cut off von Hipper while the latter continued northward, apparently without knowledge of the superior force threatening his line of retreat.



The Grand Fleet with its superior strength sought a general engagement, concentrated fleet against concentrated fleet. On the other hand, the High Sea Fleet did not wish to accept this challenge, but was on the alert to cut off and overwhelm any British detachment before reinforcements could arrive. At the same time, in the light of what actually happened, it must be inferred that von Scheer was prepared to engage the main body of the British Fleet provided he could get Jellicoe to fight on his own terms, thereby giving him the chance to employ the special tactics he had perfected, by which he hoped to take on only

THE BRITISH GRAND FLEET COMPRISED:

(a) The main battle fleet, under Admiral Jellicoe—flying his flag in the *Iron Duke*—consisting of twenty-four dreadnoughts in three squadrons commanded by Vice Admirals Burney, Jerram, and Sturdee; a fast wing under Rear Admiral Hood (three 26-knot battle cruisers of *Invincible* class, each carrying eight 12-inch guns); a squadron of eight cruisers under Rear Admiral Arbuthnot, and twelve light cruisers and 51 destroyers disposed for scouting and screening purposes.

(b) An advance force under Vice Admiral Beatty, consisting of six battle cruisers (four

THE WAR ON THE SEA

Lions of 28.5 knots speed, each carrying eight 13.5-inch guns, and two *Indefatigables* of 25 knots speed, each carrying eight 12-inch guns) supported by the 5th Battle Squadron, under Rear Admiral Evan-Thomas (four 25-knot battleships of the *Queen Elizabeth* class, each carrying eight 15-inch guns), accompanied by 14 light cruisers and 27 destroyers.

HOW THEY WERE DISPOSED

Diagram No. 1 shows the relative positions of the opposing fleets at 2 p. m. on May 31st. Diagram No. 2 shows in detail the cruising dispositions of the Grand Fleet at this time. The main body of the Grand Fleet was in latitude 57-57 north, longitude 3-45

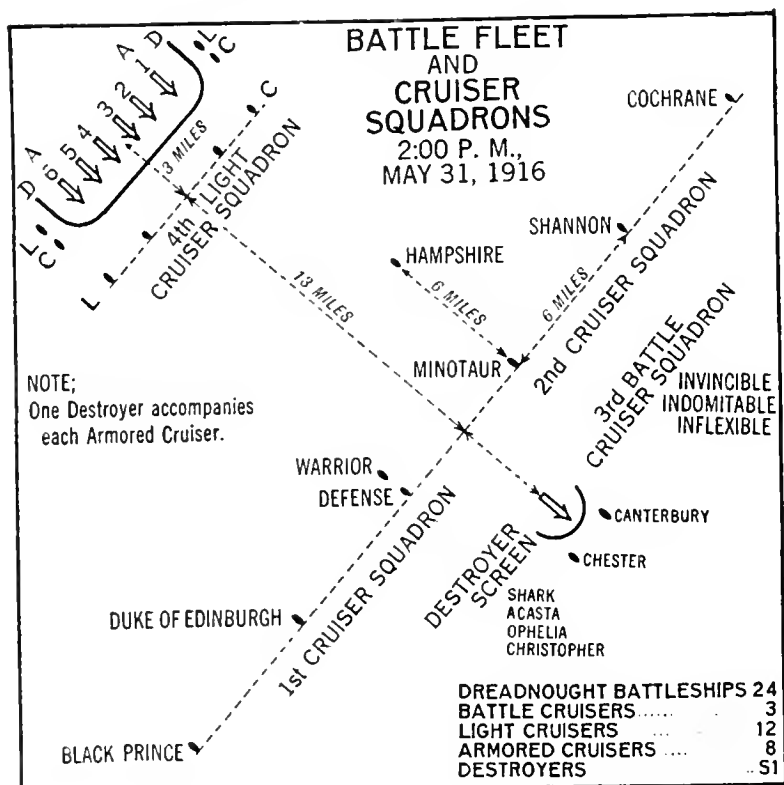


DIAGRAM No. 2.*—
Cruising formation of
Jellicoe's Battle Fleet
and Hood's Battle
Cruiser Squadron at
2:00 p.m.

THE GERMAN HIGH SEA FLEET COMPRISED:

(a) An advance force under Vice Admiral von Hipper, consisting of five battle cruisers (three *Derfflingers* of probably 26 knots speed, each carrying eight 12-inch guns, and two *Moltkes* of probably 25 knots speed, each carrying ten 11-inch guns).

(b) The main body under Admiral von Scheer, consisting of seventeen dreadnoughts and six pre-dreadnought battleships.

(c) About twenty light cruisers and eighty or ninety destroyers, divided between the advance force and the main body.

east, 77 miles north 15 degrees west from Beatty's advance force and about 125 miles to the northwestward of Admiral von Scheer's battle fleet, and disposed as follows: 24 dreadnought battleships (A-A) steaming in six columns of four ships each with four attending light cruisers (L. C.), two on each flank; the 4th, 11th, and 12th Destroyer Flotillas (D-D) screening the battleships, and the 4th Light Cruiser Squadron, three miles ahead of the battleships also in screening formation; six cruisers spread six miles apart on a line north 40 degrees east and south 40 degrees west,

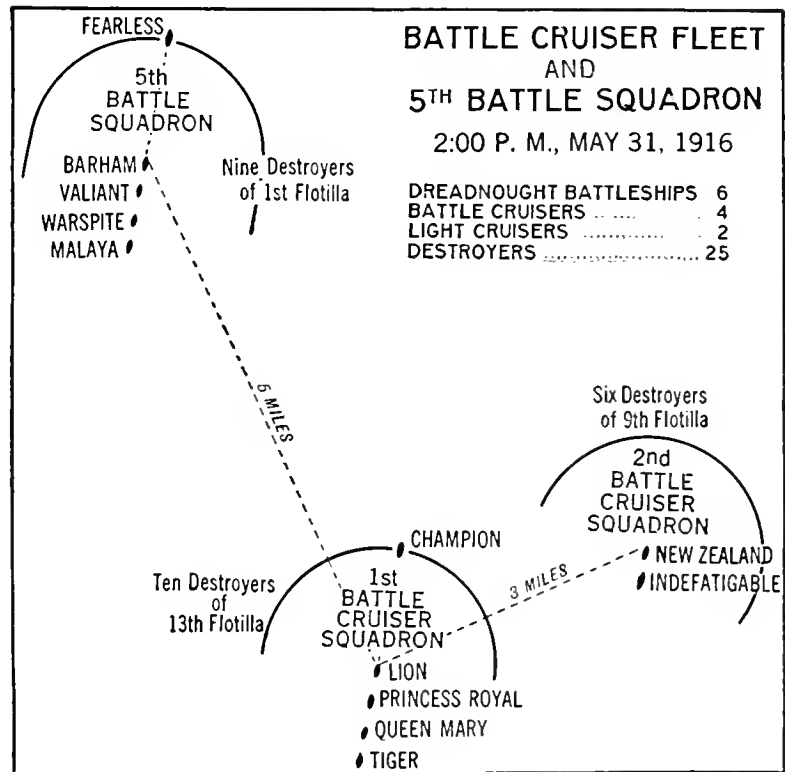
* The accompanying diagrams of the battle of Jutland were drawn by H. H. Frost of the Navy Department, Washington. They are reproduced here, by permission of the editor of the Proceedings of the Naval Institute, from prints specially made for that publication.

stationed 16 miles ahead of the Battle Fleet, with two linking cruisers to relay signals placed three miles and six miles, respectively, toward the Commander-in-Chief's flagship, the *Iron Duke*; the 3rd Battle Cruiser Squadron with two light cruisers stationed twenty miles ahead of the Battle Fleet. All these squadrons were zigzagging and advancing at the speed of 14 knots in the direction south 50 degrees east.

At this same time, 2:00 p. m., the advance

class in single line ahead, five miles N.N.W. of the *Lion*, screened by one light cruiser and nine destroyers of the 1st Flotilla; a scouting and screening line of eleven light cruisers, eight miles S.S.E. of the *Lion*, spread in a line of direction E.N.E. and W.S.W. five miles apart. The *Engadine*, a seaplane carrier, was also with these light cruisers and the link ship *Yarmouth* was midway between the line of light cruisers and the *Lion*. All of these advance forces under the command of

DIAGRAM No. 3.—
Cruising formation of
Beatty's advance force
of six battle cruisers
and four fast battleships,
with screening destroy-
ers.



force under Vice Admiral Beatty (shown in diagrams Nos. 3 and 4), consisting of six battle cruisers and four 25-knot battleships with attending light cruisers and destroyers was disposed as follows: 1st Battle Cruiser Squadron of four battle cruisers in single line ahead, Beatty's flagship, the *Lion*, leading, screened by the light cruiser *Champion* and 10 destroyers of the 13th Flotilla; the 2nd Battle Cruiser Squadron of two battle cruisers in single line ahead, three miles E.N.E. of the *Lion*, screened by six destroyers; the 5th Battle Squadron, four dreadnought battleships of the *Elizabeth*

Admiral Beatty, in order to meet the Battle Fleet at the prearranged rendezvous, were advancing on a course north by east at a speed of $19\frac{1}{2}$ knots.

The exact composition and formation of the German forces has not been disclosed, but it may be assumed that light cruisers and destroyers were disposed for scouting and screening purposes in a manner somewhat similar to that of the British. Dirigibles, also airplanes, were present, but the aircraft of both sides were handicapped by the unfavorable weather conditions.

THE BATTLE BY PHASES

It is convenient to divide the battle into the following four phases:

First Phase: British advance force encounters German advance force. Six British battle cruisers, supported by four dreadnought battle-ships, engaged with five German battle cruisers (3:48 p. m. to 4:45 p. m.).

and Vice Admiral Beatty are given to narrate the story of the battle, amplified by additional information later published by Admiral Jellicoe which is included and indicated by quotation marks. The events of the battle are described chronologically. Tactical discussion of points of particular significance is placed at the end of each phase of the narrative.

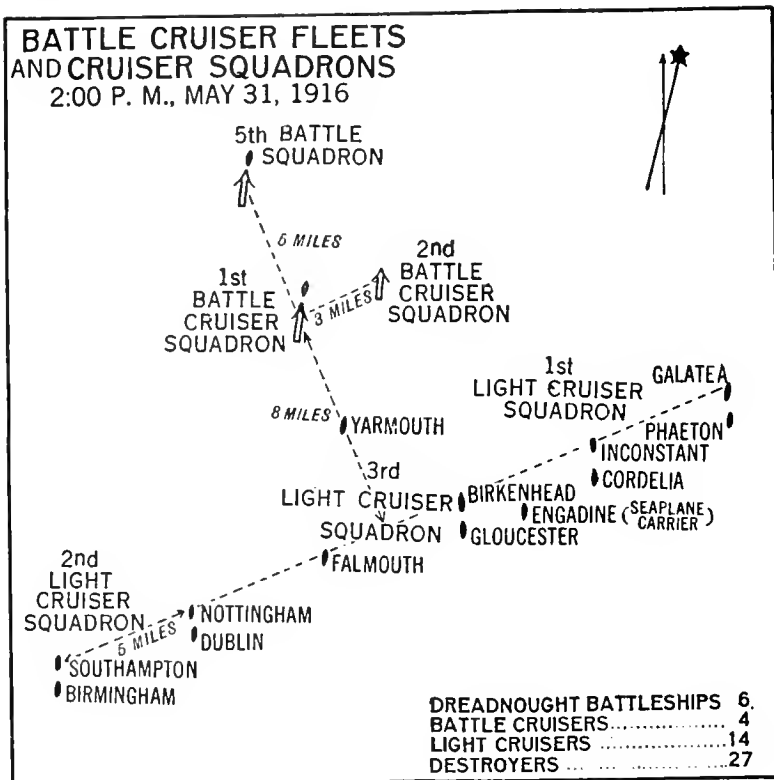


DIAGRAM No. 4.—
Cruising formation of
Beatty's entire advance
force, including scouting
line of light cruisers.

Second Phase: Action between British advance force and van of High Sea Fleet. Four British battle cruisers and four dreadnought battleships engaged with five German battle cruisers and van of German battle fleet (4:45 p. m. to 6:00 p. m.).

Third Phase: British Grand Fleet engaged with German High Sea Fleet (6:00 p. m. to dark).

Fourth Phase: Torpedo attacks and screening operations during the night (May 31 to June 1).

Each one of these phases will be taken up separately in the order named. Extracts from the official reports made by Admiral Jellicoe

I

FIRST PHASE:

ENCOUNTER BETWEEN THE ADVANCE FORCES
COMMANDED BY VICE-ADMIRAL BEATTY
(BRITISH) AND VICE-ADMIRAL HIPPER
(GERMAN)

Vice-Admiral Beatty reports:

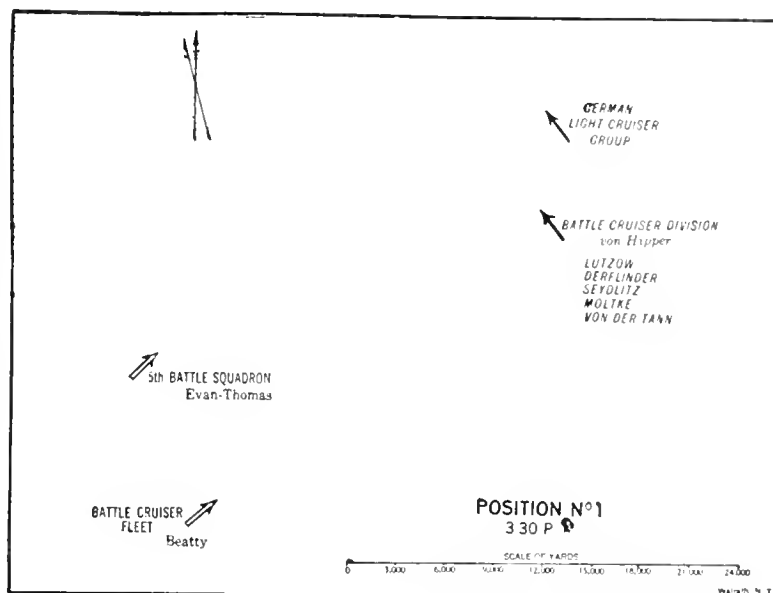
(At 2:20 p. m. reports were received from *Galatea*, the light cruiser stationed on the eastward flanks, indicating the presence of enemy vessels. The direction of advance was immediately altered to S. S. E., the course for Horn

Reef, so as to place my force between the enemy and his base.

At 2:35 p. m. a considerable amount of smoke was sighted to the eastward. This made it clear that the enemy was to the northward and eastward and that it would be impossible for him to round the Horn Reef without being brought to action. Course was accordingly altered to eastward and north-eastward, the enemy being

to send up a seaplane and scout to N. N. E. At 3:08 p. m. a seaplane was well under way; her first reports of the enemy were received in *Engadine* about 3:30 p. m. Owing to clouds it was necessary to fly very low, and in order to identify four enemy light cruisers the seaplane had to fly at a height of 900 feet within 3,000 yards of them, the light cruisers opening fire on her with every gun that would bear. This in no way in-

DIAGRAM No. 5.—
The British and German battle cruiser fleets sight each other at a distance of about 15 miles. It is to be noted that Admiral Beatty states that a report received from *Galatea* at 2:25 indicated that "the enemy force was considerable and not merely an isolated unit of light cruisers." It is also to be noted that the 5th Battle Squadron and the British battle cruisers were not concentrated before contact with the enemy.



sighted at 3:31 p. m. They appeared to be five battle cruisers. (See diagram No. 5.)

THE LIGHT CRUISERS ENGAGE

After the first report of the enemy the 1st and 3rd Light Cruiser Squadrons changed their direction and without waiting for orders spread to the east, thereby forming a screen in advance of the Battle Cruiser Squadrons and 5th Battle Squadron by the time we had hauled up to the course of approach. They engaged enemy light cruisers at long range. In the meantime the 2nd Light Cruiser Squadron had come in at high speed and was able to take station ahead of the battle cruisers by the time we turned E. S. E., the course on which we first engaged the enemy. In this respect the work of the light cruiser squadrons was excellent and of great value.

From a report from *Galatea* at 2:25 p. m. it was evident that the enemy force was considerable and not merely an isolated unit of light cruisers, so at 2:45 p. m. I ordered *Engadine*

to send up a seaplane and scout to N. N. E. At 3:08 p. m. a seaplane was well under way; her first reports of the enemy were received in *Engadine* about 3:30 p. m. Owing to clouds it was necessary to fly very low, and in order to identify four enemy light cruisers the seaplane had to fly at a height of 900 feet within 3,000 yards of them, the light cruisers opening fire on her with every gun that would bear. This in no way in-

BEATTY FORMS LINE OF BATTLE

(See diagram No. 6)

At 3:30 p. m. I increased speed to 25 knots and formed line of battle, the 2nd Battle Cruiser Squadron forming astern of the 1st Battle Cruiser Squadron, with destroyers of the 13th and 9th Flotillas taking station ahead. I turned to E. S. E. slightly converging on the enemy, who were now at a range of 23,000 yards, and formed the ships on a line of bearing to clear the smoke. The 5th Battle Squadron, who had conformed to our movements, were now bearing N. N. W., 10,000 yards. The visibility at this time was good, the sun behind us, and the wind S. E. Being between the enemy and his base, our situation was both tactically and strategically good.

At 3:48 p. m. the action commenced at a range of 18,500 yards, both forces opening fire

practically simultaneously. Course was altered to the southward, and subsequently the mean direction was S. S. E., the enemy steering a parallel course distant about 18,000 to 14,500 yards.

GERMAN FIRE RAPID AND ACCURATE

Says Admiral Jellicoe in his book:

"At the commencement the fire from the German vessels was rapid and accurate, the *Lion* being hit twice three minutes after fire was opened, and the *Lion*, *Tiger* and *Princess Royal* all receiving several hits by 4 p. m.; observers on

blown off at 4 p. m. At about 4:06 p. m. the *Indefatigable* was hit, approximately at the outer edge of the upper deck level in line with the after turret, by several projectiles of one salvo; an explosion followed (evidently that of a magazine) and the ship fell out of the line, sinking by the stern. She was again hit by another salvo forward, turned over and sank.

"About this time (4:08 p. m.) the 5th Battle Squadron came into action, opening fire at a range between 19,000 and 20,000 yards. This slower squadron was some distance astern of the battle cruisers, and, by reason partly of the smoke of the ships ahead of the enemy vessels

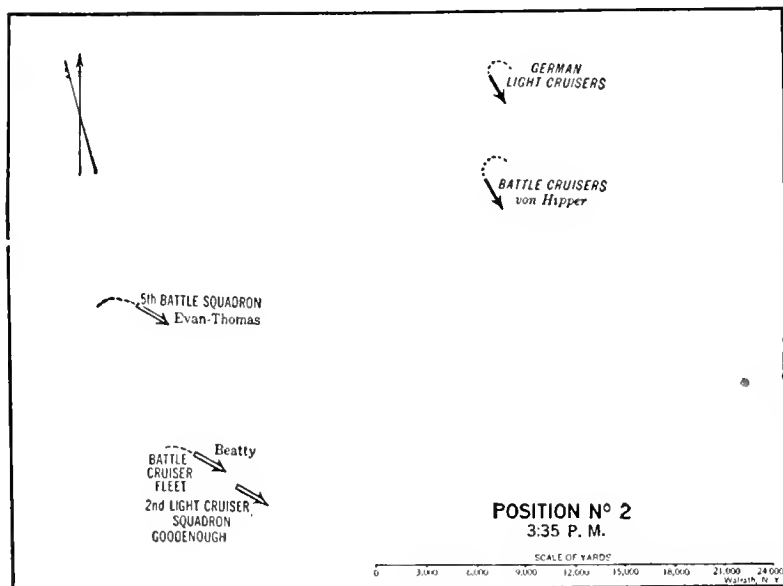


DIAGRAM No. 6.—At 3:30 Beatty increased speed from 19 knots to 25 knots as the opposing squadrons turned simultaneously to a southeasterly course, opening fire eighteen minutes later at a range of 18,500 yards.

Von Hipper narrowly escaped being cut off from von Scheer, and it may be inferred from his continuing so long on a northerly course that his air and water-borne scouts failed to keep him informed of Beatty's movements.

board our own ships were also of opinion that our fire was effective at that stage.

"At about 4 p. m. it was evident by the accuracy of the enemy's fire that he had obtained the range of our ships, which was then about 16,000 yards. The enemy bore well abaft the beam, and course was altered slightly to the southward to confuse his fire control. Course was altered two or three times subsequently for the same purpose. The German ships frequently zigzagged for the purpose of confusing our fire control.

LOSS OF THE INDEFATIGABLE

(See diagram No. 7)

"At this period the fire of the enemy's ships was very rapid and accurate; the *Lion* received several hits, the roof of one of her turrets being

and partly of the light to the eastward having become less favorable, difficulty was experienced in seeing the targets, not more than two ships being visible at a time. At 4:12 p. m. the range of the enemy's battle cruisers from our own was about 23,000 yards, and course was altered from S.S.E. to S.E. to close the enemy. Fire had slackened owing to the increase in range.

"The tracks of torpedoes were now reported as crossing the line of our battle cruisers, and reports of sighting the periscopes of enemy submarines were also made by more than one ship."

ENEMY SUBMARINES SEEN—FIERCE ENGAGEMENT BETWEEN DESTROYERS

Continuing Admiral Beatty says:

It would appear that at this time we passed through a screen of enemy submarines. The

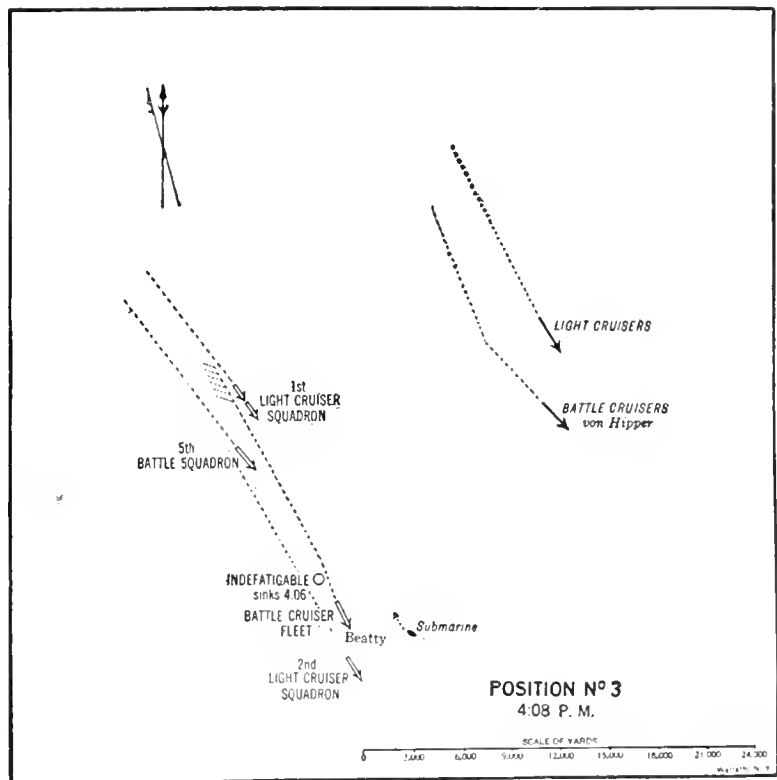
destroyer *Landrail* of 9th Flotilla, who was on our port beam trying to take station ahead, sighted the periscope of a submarine on her port quarter. Though causing considerable inconvenience from smoke, the presence of *Lydiard* and *Landrail* undoubtedly preserved the battle cruisers from closer submarine attack. *Nottingham* also reported a submarine on the starboard beam.

Eight destroyers of the 13th Flotilla, *Nestor*,

frustrated. (Some torpedoes were fired by the enemy, two of which crossed the track of the 5th Battle Squadron, which had been turned away to avoid the attacks.) Our destroyers sustained no loss in this engagement, but their attack on the enemy battle cruisers was rendered less effective owing to some of the destroyers having dropped astern during the fight. Their position was therefore unfavourable for torpedo attack.

DIAGRAM No. 7.—*Indefatigable* is sunk at 4:06. The 5th Battle Squadron comes into action at 4:08 at a range of 20,000 yards. Von Hipper does not appear to have had sufficient speed to draw away from the British 25-knot battleships, and probably turned away to open the range. Beatty, at the same time, also opened the range as the *Indefatigable* was sunk. A German submarine was seen.

At 4:12 the range between the battle cruisers had been opened to 23,000 yards and fire had slackened. Beatty then altered course from S.S.E. to S.E. to close the enemy.



Nomad, *Nicator*, *Narborough*, *Pelican*, *Petard*, *Obdurate*, *Nerissa*, with *Moorsom* and *Morris* of 10th Flotilla, *Turbulent* and *Termagant* of the 9th Flotilla, having been ordered to attack the enemy with torpedoes when opportunity offered, moved out at 4:15 p. m. simultaneously with a similar movement on the part of the enemy. The attack was carried out in the most gallant manner and with great determination. Before arriving at a favourable position to fire torpedoes, they intercepted an enemy force consisting of a light cruiser and 15 destroyers. A fierce engagement ensued at close quarters, with the result that the enemy were forced to retire on their battle cruisers, having lost two destroyers sunk, and having their torpedo attack

TWO BRITISH DESTROYERS SUNK

Nestor, *Nomad* and *Nicator* pressed home their attack on the battle cruisers and fired two torpedoes at them at a range of 6,000 and 5,000 yards, being subjected to a heavy fire from the enemy's secondary armament. *Nomad* was badly hit and apparently remained stopped between the lines. (She was sunk later by the German Battle Fleet.) Subsequently *Nestor* and *Nicator* altered course to the S.E., and in a short time the opposing battle cruisers having turned 16 points, found themselves within close range of a number of enemy battleships. Nothing daunted, though under a terrific fire, they stood on, and their position being favourable for torpedo at-

tack, fired a torpedo at the second ship of the enemy line at a range of 3,000 yards. Before they could fire their fourth torpedo, *Nestor* was badly hit and swung to starboard, *Nicator* altering course inside her to avoid collision and thereby being prevented from firing the last torpedo. *Nicator* made good her escape and subsequently rejoined the 13th Flotilla. *Nestor* remained stopped, but was afloat when last seen. (She was sunk later by the German Battle Fleet.) *Moorsom* also carried out an attack on the enemy's Battle Fleet.

Petard, *Nerissa*, *Turbulent* and *Termagant* also pressed home their attack on the enemy battle cruisers, firing torpedoes at 7,000 yards after the engagement with enemy destroyers. *Petard* reports that all her torpedoes must have crossed the enemy's line, while *Nerissa* states that one torpedo appeared to strike the rear ship. These destroyer attacks were indicative of the spirit pervading His Majesty's Navy, and were worthy of its highest traditions.

From 4:15 to 4:43 p. m. (see diagram No. 8) the conflict between the opposing battle cruisers was of a very fierce and resolute character. The 5th Battle Squadron was engaging the enemy's rear ships, unfortunately at very long range. Our fire began to tell, the accuracy and rapidity of that of the enemy depreciating considerably. At 4:18 p. m. the third enemy ship was seen to be on fire. The visibility to the north-eastward had become considerably reduced and the outline of the ships very indistinct.

At 4:26 p. m. there was a violent explosion in *Queen Mary*; she was enveloped in clouds of gray smoke and disappeared. Eighteen of her officers and men were subsequently picked up by *Laurel*.

THE *QUEEN MARY*, STRUCK BY AN ENEMY SALVO, EXPLODES AND VANISHES

"A salvo fired from one of the enemy's battle cruisers," Admiral Jellicoe says of this incident, "hit the *Queen Mary* abreast of 'Q' turret and a terrific explosion resulted, evidently caused by magazine blowing up. The *Tiger*, which was following close astern of the *Queen Mary*, passed through the dense cloud of smoke caused by the explosion, and a great deal of material fell on her decks, but otherwise the *Queen Mary* had completely vanished. A few survivors from this ship and from the *Indefatigable* were afterwards rescued by our destroyers. The loss of these two fine ships with their splendid ships' companies was a heavy blow to the Battle Cruiser Fleet, the instantaneous nature of the disaster adding to its magnitude."

GERMAN BATTLE FLEET SIGHTED

(See diagram No. 9)

Beatty's report continues as follows:

At 4:38 p. m. *Southampton* reported the enemy's Battle Fleet ahead. The destroyers were recalled, and at 4:42 p. m. the enemy's Battle Fleet was sighted S.E. Course was altered 16 points in succession to starboard, and I proceeded on a northerly course to lead them towards the Grand Fleet. The enemy battle cruisers altered course shortly afterwards, and the action continued. *Southampton* with the 2nd Light Cruiser Squadron held on to the southward to observe. They closed to within 13,000 yards of the enemy battle fleet and came under a very heavy but ineffective fire. *Southampton's* reports were most valuable.*

The 5th Battle Squadron were now closing on an opposite course and engaging the enemy battle cruisers with all guns. The position of the enemy Battle Fleet was communicated to them, and I ordered them to alter course 16 points. Led by Rear Admiral Hugh Evan-Thomas, M.V.O., in *Barham*, this squadron supported us brilliantly and effectively.

This completed the first phase, the battle continuing on northerly courses.

"The necessary move of the battle cruisers to the southward in their pursuit of the enemy," says Admiral Jellicoe, "at a speed considerably in excess of that which the Battle Fleet could attain, resulted in opening the distances between the two forces, so that at the time of the turn of Sir David Beatty's force to the northward, the *Iron Duke* and the *Lion* were over 50 miles apart, and closing at a rate of about 45 miles."

DISCUSSION OF FIRST PHASE

During the first phase, lasting about an hour, from 3:48 to the time the British changed course 16 points at 4:45, the British battle cruiser *Indefatigable* (tonnage 18,750,

* "Owing to the constant maneuvering of the ships of the 2nd Light Cruiser Squadron during the engagement, the position of the *Southampton*, as obtained by reckoning, was somewhat inaccurate, as was to be expected. This fact detracted from the value of the reports to me; the position of the enemy by latitude and longitude, as reported from time to time to the *Iron Duke*, was consequently incorrect. This discrepancy added greatly to the difficulty experienced in ascertaining the correct moment at which to deploy the Battle Fleet, the flank on which to deploy, and the direction of development. Such discrepancies are, however, inevitable under the conditions." (From Admiral Jellicoe's book.)

(From Admiral Jellicoe's book.)

main battery eight 12-inch, carrying 899 men) was sunk at 4:05, and the *Queen Mary* (tonnage 27,000, main battery eight 13.5-inch guns, carrying 1,000 men) was destroyed at 4:26. It is also reported that the British lost four destroyers and the Germans two. Before taking up the second phase of the battle, a few points bearing on the first phase will be briefly discussed.

Following the engagement there was comment to the effect that Admiral Jellicoe vio-

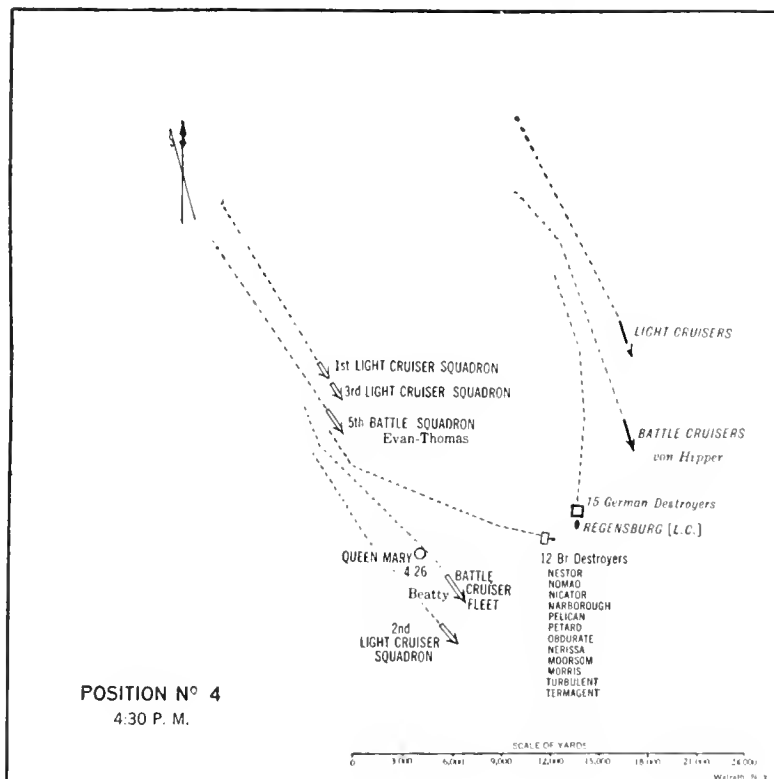
effect that Admiral Beatty rashly exposed his command; that the Germans counted on his impetuosity; and it has been said that he did just what Admiral von Hipper expected him to do and wanted him to do. On the other hand, it is evident that in the beginning the situation was favorable to the British.

The plan of coördination between the main body under Admiral Jellicoe and the British advance force is not clear. Also the preliminary tactics of Beatty have not been published

DIAGRAM No. 8.—

At 4:15 opposing destroyers move out simultaneously to attack and fight desperately at close range between the lines. Both Beatty and von Hipper apparently turn toward each other to renew the capital ship engagement.

As the range closes the battle cruisers engage hotly at 4:26 *Queen Mary* is sunk by gun fire.



lated the principle of concentration of forces by sending in advance a squadron of four battleships to support Admiral Beatty's battle cruisers. The consensus of professional opinion, however, does not appear to support any such criticism. This advance force was composed entirely of fast ships (the battleships had the unusually high speed of 25 knots), operating on interior lines between the supporting British Fleet and the enemy main fleet, with little or no chance of being cut off by a superior enemy force.

There is also more or less criticism to the

in complete detail and the exact movements of von Hipper have not been revealed. But from what is known certain inferences may be drawn.

Beatty was steaming northward at a speed of 19½ knots when the outpost ships of the enemy were sighted at 2:20 p. m., and he turned immediately, heading to the southeast to cut off von Hipper. At 2:35 p. m., however, he again changed course to eastward and then to northeastward. Beatty states in his official report that speed was increased to 25 knots at 3:30 p. m. At this time the 25-knot bat-

tleships had not yet closed the British battle cruisers and at 3:48 when the action opened they were still 10,000 yards to the northwest. Evan-Thomas's battleships did not get into action until 4:08, and then were at the extreme range of 20,000 yards. It is reported that when the light forces made contact von Hipper first headed to the northward and east-

this advance German force would have been overwhelmed. It is not clear why Beatty failed to concentrate his force before making contact with the enemy. It is interesting to note that at this time, and throughout the engagement, in spite of the presence of air scouts and a large number of fast water-borne scouts on both sides, the naval commanders directing

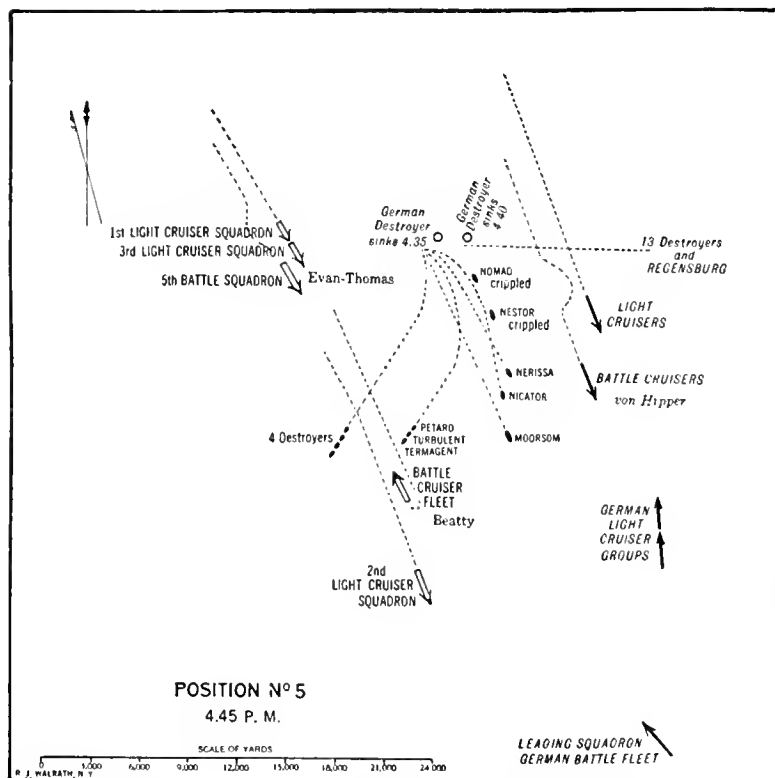


DIAGRAM No. 9.—Von Scheer's battle fleet was sighted by Beatty at 4:42. He turns his battle cruisers sixteen points in succession. Von Hipper also turns his ships sixteen points and takes station ahead of Von Scheer.*

It is to be noted that Von Hipper did not close the range and cross between Beatty and von Scheer at this critical juncture, but allowed the British Admiral to execute his turn-about under nothing worse than a long range fire. It may be that destroyer attacks caused von Hipper to turn the other way. It will be seen that under similar circumstances later in the day, Beatty executed the crossing and closing maneuver.

ward to investigate and was steaming away from his supporting Battle Fleet when sighted at about 3:30 p. m.

It would appear that by thus persisting on northerly courses von Hipper might have placed himself in an unfavorable position, especially if Beatty had continued a little longer on his southeast course and increased speed or concentrated his squadrons earlier. It may be that the German Admiral depended upon aircraft to inform him of the whereabouts of the British forces and that weather conditions caused them to fail in their mission. Had Admiral Beatty now interposed his superior force between von Hipper and von Scheer and perhaps turned the former toward Jellicoe

the fleet movements appear to have been greatly handicapped by inadequate information.

INFERIOR SPEED OF THE GERMANS

There are indications that von Hipper's best speed was less than 25 knots. It is reported that the 5th Battle Squadron could not sustain better than 24½ knots. These ships closed the range in the beginning, opening fire at 4:08; and while they do not appear to

* The German light cruisers present were:—Rostock, Elbing, Regensburg, Wiesbaden, and Frauenlob. Also possibly:—Danzig, Hamburg, Berlin, Lubeck, Munchen, Frankfurt, Pillau, Graudenz, Stralsund, Strossburg, Kolberg, Augsburg, Stuttgart, and Stettin.

It is assumed that 15 were present; 5 with Von Hipper; 10 with Von Scheer. The armored cruiser Roon was probably flagship of a light cruiser group.

have been able to get much nearer than 20,000 yards, they apparently held on pretty well at about that range or a little less. In the circumstances von Hipper must be given considerable credit for not only extricating his force of inferior strength, but for sinking two British ships and damaging others while leading Beatty's force straight toward von Scheer. It is to be noted that the German ships bore well abaft the beam of the British battle cruisers at 4:00 p. m. when von Hipper's rapid and accurate fire caused Beatty to turn to the southward. This is of considerable tactical interest as it shows how well-directed gun fire may more than offset a slight disadvantage in speed. How much damage the German battle cruisers suffered during this phase is not known, but it does not appear to have been very great.

Upon the approach of the High Sea Fleet, Beatty turned his ships 16 points in succession, a maneuver likely to prove disastrous if attempted under gun fire. Reports are somewhat obscure as to just what happened at this time, but it seems that the British ships accomplished the turn without suffering much damage, and that the German battle cruisers turned around at about the same time. The squadrons had probably drawn apart, or perhaps the battleships under Admiral Evan-Thomas were used to provide a covering fire while Admiral Beatty countermarched.

Some incline to the opinion that Admiral von Hipper failed to take advantage of his opportunity to close to a semi-T-ing or capping position where he might have hammered Admiral Beatty's ships on the knuckle of their pivoting point without subjecting his own ships to anything worse than a long range fire from the 15-inch guns of the enemy battleships. It may be that the German battle cruisers did not have enough speed to do this; or it may be that Admiral von Hipper was intent only on drawing the enemy into the fire of the approaching German Battle Fleet; or, perhaps, the destroyer attacks may have influenced von Hipper to turn the other way. This question has particular interest because later in the day under very similar circumstances Beatty employed the closing and crossing tactics.

The point has been raised that from a gun-

nery point of view it would have been advisable for the engaged squadrons to reverse their direction by turning all ships around simultaneously instead of counter-marching in succession. It is probable, however, that the conditions—somewhat confused by smoke, mist, and gun fire—inclined the Admirals to favor simple, follow-the-leader tactics which did not require signals. At any rate, whatever the actual circumstances, neither side lost any ships at this time and the battle continued on northerly courses, beginning the second phase.

II

SECOND PHASE

ACTION BETWEEN BRITISH ADVANCE FORCE
OF BATTLE CRUISERS, SUPPORTED BY
FOUR BATTLESHIPS, AND GERMAN BAT-
TLE CRUISERS, SUPPORTED BY GERMAN
HIGH SEA BATTLE FLEET

(See Diagram No. 10)

Vice-Admiral Beatty reports:

At 4:57 p. m. the 5th Battle Squadron turned up astern of me and came under the fire of the leading ships of the enemy Battle Fleet. *Fearless* with the destroyers of 1st Flotilla joined the battle cruisers, and, when speed admitted, took station ahead. *Champion* with 13th Flotilla took station on the 5th Battle Squadron. At 5 p. m. the 1st and 3rd Light Cruiser Squadrons, which had been following me on the southerly course, took station on my starboard bow; the 2nd Light Cruiser Squadron took station on my port quarter.

The weather conditions now became unfavourable, our ships being silhouetted against a clear horizon to the westward, while the enemy were for the most part obscured by mist, only showing up clearly at intervals. These conditions prevailed until we had turned their van at about 6 p. m.

Says Jellicoe:

"A photograph taken on board the *Malaya* at 5:15 p. m. towards the western horizon establishes this clearly. Our destroyers, shown silhouetted against the bright horizon, were at this time at least 16,000 yards distant.

"Our battle cruisers ceased fire altogether for about 30 minutes after 5:12 p. m. owing to the enemy's ships being invisible, fire being reopened at about 5:40 p. m. on the enemy's battle cruisers,

three or four of which could be seen, although indistinctly, at a distance of some 14,000 yards. Between 5:42 and 5:52, however, our fire seemed to be effective, the *Lion* alone firing some 15 salvos during this period."

GERMAN BATTLE CRUISER QUILTS

Admiral Beatty's report continues:

Between 5 and 6 p. m. the action continued on a northerly course, the range being about 14,-

was judged to be the 6th ship in the line. *Moresby* then passed between the lines to clear the range of smoke, and rejoined *Champion*. In corroboration of this, *Fearless* reports having seen an enemy heavy ship heavily on fire at about 5:10 p. m., and shortly afterwards a huge cloud of smoke and steam similar to that which accompanied the blowing up of *Queen Mary* and *Indefatigable*.

At 5:35 p. m. (see diagram No. 11) our course was N.N.E. and the estimated position

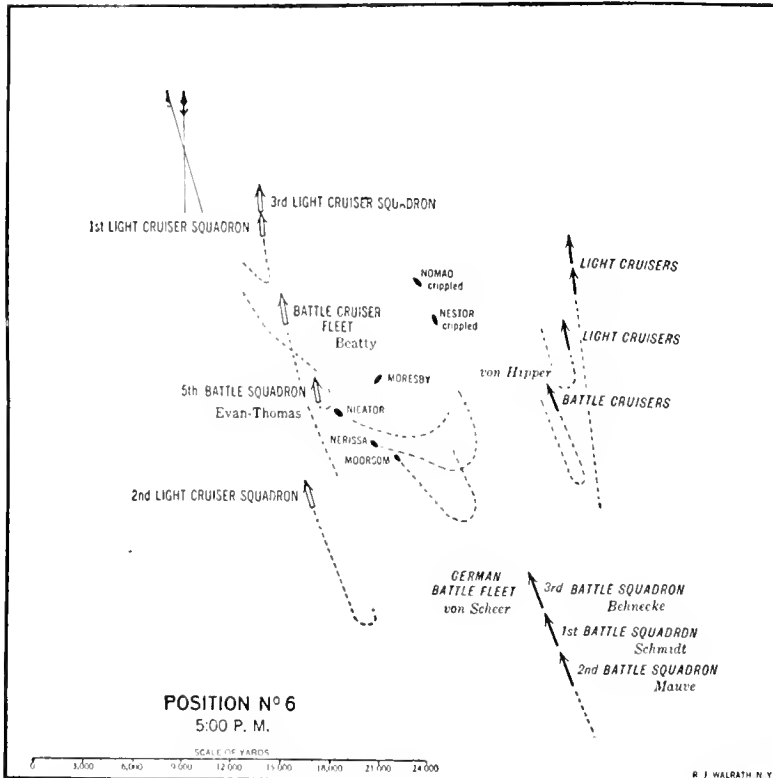


DIAGRAM NO. 10.—The battle continues to the northward. The 5th Battle Squadron takes station astern of Beatty and comes under the fire of the leading ships of von Scheer's battle fleet.*

Von Hipper turns his ships left about and takes station ahead of von Scheer.

000 yards. During this time the enemy received very severe punishment, and undoubtedly one of their battle cruisers quitted the line in a considerably damaged condition. This came under my personal observation and was corroborated by *Princess Royal* and *Tiger*. Other enemy ships also showed signs of increasing injury.

At 5:05 p. m. *Onslow* and *Moresby*, who had been detached to assist *Engadine* with the seaplane, rejoined the battle cruiser squadrons and took station on the starboard (engaged) bow of *Lion*. At 5:10 p. m. *Moresby*, being 2 points before the beam of the leading enemy ship, fired a torpedo at the 3rd in their line. Eight minutes later she observed a hit with a torpedo on what

of the Grand Fleet was N. 16 W., so we gradually hauled to the northeastward, keeping the range of the enemy at 14,000 yards. He was gradually hauling to the eastward, receiving severe punishment at the head of his line, and probably acting on information received from his light cruisers which had sighted and were engaged with the Third Battle Cruiser Squadron (vide *Indomitable's* report). Possibly

* Composition of the German Battle Fleet—Third Battle Squadron, First Division:—*König, Grosser Kurfürst, Margraf, Kronprinz*. Second Division:—*Kaiser, Kaiserin, König Albert, Friedrich Der Grosser* (Fleetflag). First Battle Squadron:—*Thüringen, Helgoland, Ostfriesland, Oldenburg, Westfalen, Nassau, Posen, Rheinland*; Second Battle Squadron:—Six pre-dreadnoughts armed with 4 11-inch caliber guns each.

Zeppelins were present also. At 5:50 p. m. British cruisers were sighted on the port bow, and at 5:56 p. m. the leading battleships of the Grand Fleet bearing north 5 miles. I thereupon altered course to east and proceeded at utmost speed. This brought the range of the enemy down to 12,000 yards. I made a report to the Commander-in-Chief that the enemy battle cruisers bore south-east. At this time only three of the enemy battle cruisers were visible, closely followed by battleships of the *König* class.

This completed the second phase of the battle, during which four British battle cruisers and four battleships were engaged for about one hour and a half with the van of the German fleet led by five battle cruisers followed by battleships of the *König* class. Light cruisers and destroyers were also intermittently engaged during this phase and a few isolated but determined torpedo attacks were pushed home.

DISCUSSION OF SECOND PHASE

In this second phase, while at first glance it appears that four British battle cruisers supported by four battleships were engaging the entire German High Sea Fleet, such was not strictly speaking the case. The superior speed of the British squadrons enabled them to keep in the van, out of range of the enemy center and rear. The fastest German battleships are listed as having a speed of 20.5 knots, but it seems they can make 23 knots for a short period, and Admiral Jellicoe states that the 5th Battle Squadron when going at its utmost speed had considerable difficulty in increasing distance from the enemy's 3rd Battle Squadron consisting of ships of the *König* class. This observation is significant as it indicates that in this second phase von Scheer with his dreadnoughts of the *König* class pressed after Beatty at a speed which must have left his slower battleships behind. From this it may be inferred that the German Admiral had no intention of engaging in a fleet-to-fleet action. It may be that his object was to do as much damage as possible to Beatty's detachment before reinforcements could arrive, which is logical and in keeping with the approved German North Sea strategy.

It is not clear whether the Germans turned to the eastward to avoid being capped or T-ed by the faster enemy ships, or whether they originated the easterly change of course be-

cause of the approaching British Battle Fleet, but this maneuver put the British Fleet in a tactically favorable position for gun fire as well as ultimately placing them between the German Fleet and its bases.

In effecting junction with the Grand Fleet, Beatty closed the enemy and crossed ahead of Jellicoe, between him and the enemy, whereas, it will be recalled that earlier in the afternoon, at the end of the first phase, von Hipper in making junction with von Scheer, under somewhat similar circumstances, did not do this, and, at that time, Beatty extricated himself from an awkward position without loss.

The disadvantage of Beatty's closing and crossing tactics is that the gun fire of a battle fleet may be temporarily blanketed and perhaps the battleships delayed in getting into action. The advantages, however, appear to more than outweigh the disadvantages. For one thing, such tactics prevent an enemy of inferior strength from counter-marching and quickly withdrawing. A sharp turn of 16 points under a heavy gun fire on the knuckle at 12,000 yards range would involve a handicap and risk of disaster which no commander would willingly incur. Another advantage of these closing and crossing tactics is that they are likely to throw the van of the enemy into confusion.

Evan-Thomas with his 25-knot battleships, however, did not follow Beatty in this maneuver, but turned away and took station as rear squadron of the Battle Fleet. More details are to be sought for the discussion of this point. Whether or not the German battle cruisers and the *König* class battleships having drawn ahead of the rest of von Scheer's fleet bears upon it, the writer has not yet seen any authentic report covering the details of the German tactics.

III

THIRD PHASE

THE CRITICAL SITUATION AS BRITISH GRAND FLEET ENGAGES WITH GERMAN HIGH SEA FLEET

DURING the critical period between 6 p. m. and 6:30 p. m. when Jellicoe was deploying the battle fleet and making contact with his advance forces and also with the

enemy, we find a complicated situation. (See diagrams Nos. 11, 12, and 13.)

Hood, who has taken his three battle cruisers with attending light cruisers and destroyers too far to the southeastward and has missed contact with Beatty and the enemy due to a discrepancy in navigation, has discovered the error and is heading back to the north and west and his light craft are engaged with the enemy.

sighting Hood's ships to the eastward, first turn 16 points and head west, evidently thinking Jellicoe's battleships are behind Hood, and then discovering that Jellicoe is to the north-west, turn around again back to their original easterly course, all in the space of about 15 minutes.

A little later Hood's ships counter-march and take station ahead of the *Lion*.

It must be remembered that these battle

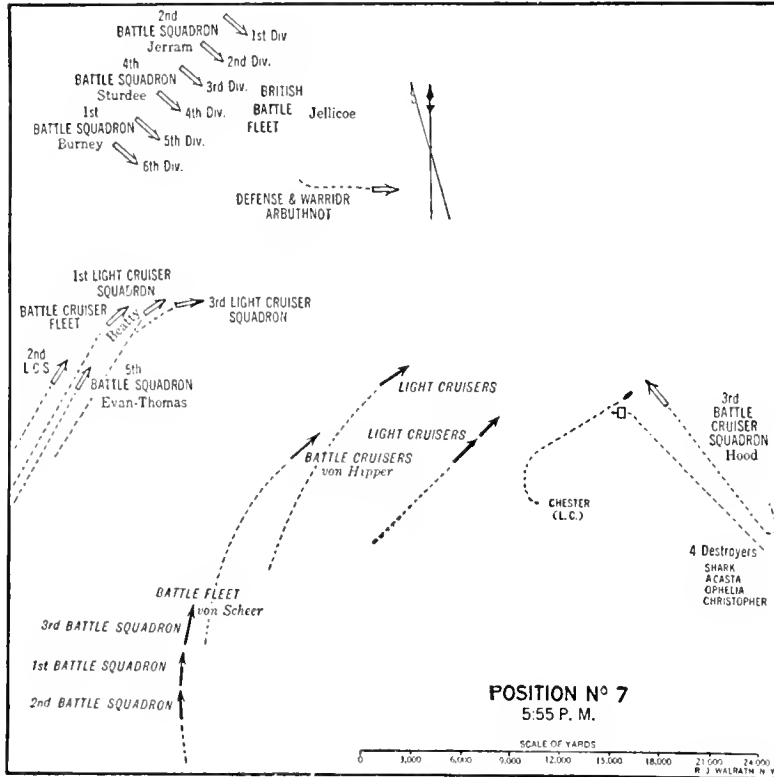


DIAGRAM No. 11.—Contact was made with Jellicoe's battle fleet at 5:15 p.m. Beatty changes course to eastward and crosses enemy's van at top speed; Hood approaches on an opposite course from the south east; Jellicoe is perplexed by meager and conflicting information.

Beatty is driving at top speed to the eastward, crossing between the enemy and Jellicoe's approaching battleships which are deploying into a battle line on a southeasterly course. Evan Thomas' four battleships have broken off from astern of Beatty and are turning to the northwest to bring up the rear of Jellicoe's fleet.

The light forces are engaged in confused fighting, and Arbuthnot's armored cruisers on a southerly course have crossed Beatty's line of advance and are being destroyed between the lines.

Von Hipper's battle cruisers, confused at

cruiser squadrons were drawing together on opposite courses at a rate of 50 miles an hour, the speed of each being about 25 knots, while the mist, smoke and gun fire made it difficult to distinguish friend from foe.

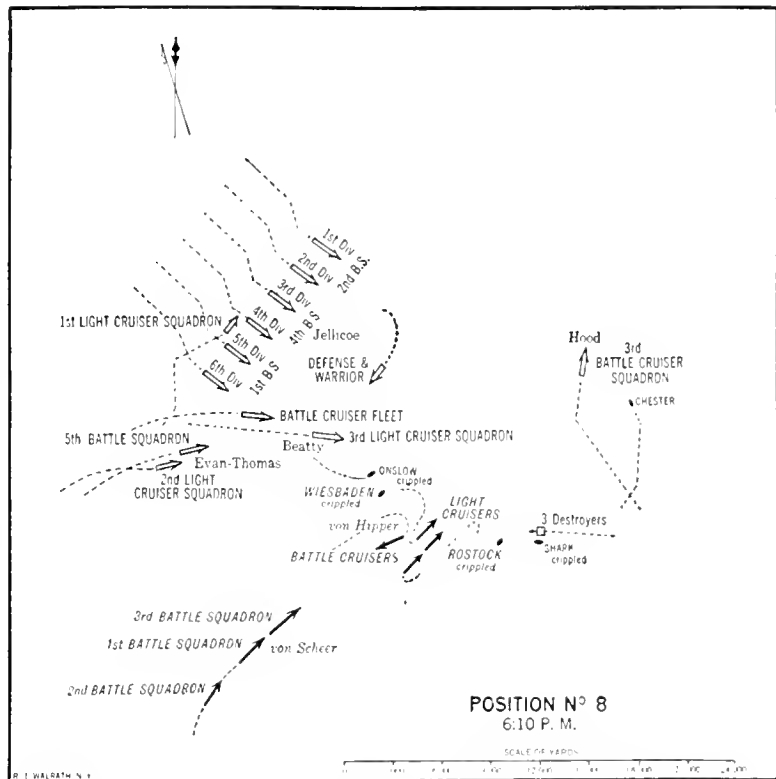
DETAILS OF THIRD PHASE

The third phase opens with four battle cruisers under Admiral Beatty crossing the enemy van on an easterly course, making junction with three battle cruisers, *Invincible*, *Inflexible*, *Indomitable*, under Hood, approaching from the opposite direction on a westerly

course. Shortly after 6 p. m. enemy vessels fired torpedoes at Hood's battle cruisers; the tracks of five torpedoes were seen later from the *Indomitable*. At about 6:10 p. m. the *Invincible* and *Indomitable* turned to starboard to avoid these torpedoes, three of which passed very close to the latter ship and ran alongside within twenty yards of the vessel. The *Inflexible* turned to port.

proceeded at full speed on a S.E. by S. course to close the Battle Cruiser Fleet. During the two hours that elapsed before the arrival of the Battle Fleet on the scene, the steaming qualities of the older battleships were severely tested. Great credit is due to the engine-room departments for the manner in which they, as always, responded to the call; the whole fleet maintaining a speed in excess of the trial speeds of some of the older vessels.

DIAGRAM NO. 12.—
Jellicoe changes course at 6:02 three points to southwards and at 6:08 back again to south-east. At 6:14 Beatty signals position of enemy battle fleet and Jellicoe signals to deploy into battle line on the first division, at the same time reducing speed to 14 knots to allow Beatty's ships to pass ahead and clear the range. Jellicoe's 6th Division opens fire at 6:17. Von Hipper sights Hood's squadron and turns sixteen points but soon turns again, resuming an easterly course. Hood turns north to avoid torpedo attack, but soon after turns west and heads for Beatty.



Admiral Jellicoe states:

"It appears certain that between about 6:00 p. m. and 6:16 p. m. the German battle cruisers turned 16 points towards their Battle Fleet, and again turned 16 points to their original course." (See diagram No. 12.)

MOVEMENTS OF BRITISH BATTLE FLEET

In his official report of the Jutland battle, Admiral Jellicoe says:

"On receipt of the information that the enemy had been sighted, the British Battle Fleet, with its accompanying Cruiser and Destroyer Forces,

"The Third Battle Cruiser Squadron, commanded by Rear Admiral the Hon. Horace L. A. Hood, which was in advance of the Battle Fleet, was ordered to reinforce Sir David Beatty. The difference in reckoning between *Lion* and the *Iron Duke*, which was inevitable under the circumstances existing, apparently caused the Third Battle Cruiser Squadron to press rather too far to the eastward, and it was not until 5:30 p. m. that this squadron observed flashes of gun fire and heard the sound of guns to the southwestward. Rear Admiral Hood sent the *Chester* to investigate and this ship engaged three or four enemy light cruisers at about 5:45 p. m. The engagement lasted for about twenty minutes.

"At 5:45 p. m. the report of guns had become audible to me, and at 5:55 p. m. (see diagram No. 11) flashes were visible from ahead round to the starboard beam, although in the mist no ships could be distinguished and the position of the enemy's Battle Fleet could not be determined. The difference in reckoning between *Iron Duke* and *Lion* added to the uncertainty of the general situation.

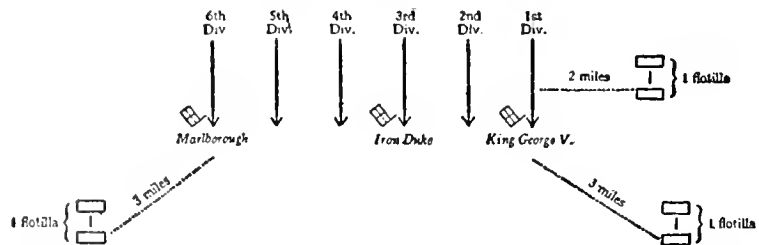
"At 6 p. m. vessels, afterwards seen to be our battle cruisers, were sighted by *Marlborough* bearing before the starboard beam of the Battle Fleet.

BATTLE FLEET ALTERS COURSE

(See diagram No. 12)

"In order to take ground to starboard," says Admiral Jellicoe in his book, "with a view to clearing up the situation without altering the formation of the Battle Fleet, a signal had been made to the Battle Fleet at 6:02 p. m. to alter course leaders together, the remainder in succession, to south (a turn of 3 points). Speed was at the same time reduced to 18 knots to allow of the ships closing up into station. About 5 minutes later, in order to be prepared for deployment, I turned the Fleet to a southeast course, leaders together and the remainder in succession, and the destroyer flotillas were directed by signal, at 6:08 p. m., to take up the destroyer position No. 1 for battle. This order disposed them as follows:

Relative Positions of Battle Fleet and Destroyer Flotillas.



In his official report, Jellicoe says:

"At 6:00 p. m. the Vice Admiral Commanding, Battle Cruiser Fleet, reported to me the position of the enemy battle cruisers, and at 6:14 p. m. reported the position of the enemy Battle Fleet.

"At this period, when the Battle Fleet was meeting the battle cruisers and the Fifth Battle Squadron, great care was necessary to ensure that our own ships were not mistaken for enemy vessels.

"I formed the Battle Fleet in line of battle on receipt of Sir David Beatty's report, and

during deployment the fleets became engaged. Sir David Beatty had meanwhile formed the battle cruisers ahead of the Battle Fleet.

At 6:06 p. m. the Rear Admiral Commanding 5th Battle Squadron, then in company with the battle cruisers, had sighted the starboard wing division of the Battle Fleet on the port bow of *Barham*, and the first intention of Read Admiral Evans-Thomas was to form ahead of the remainder of the Battle Fleet, but on realizing the direction of deployment he was compelled to form astern, a maneuver which was well executed by the squadron under a heavy fire from the enemy Battle Fleet. An accident to *Warspite's* steering gear caused her helm to become jammed temporarily and took the ship in the direction of the enemy's line, during which time she was hit several times. Clever handling enabled Captain Phillpotts to extricate his ship from a somewhat awkward situation."

At 6:16 simultaneously with signal to deploy the British Battle Fleet reduced speed to 14 knots in order to allow the battle cruisers to form ahead. At 6:33 speed was increased to 17 knots.* Says Jellicoe:

"At 6:14 p. m. the enemy's salvos were falling near ships of the 1st Battle Squadron, and the *Marlborough's* Division of the Battle Squadron became engaged with some ships of the enemy's Battle Fleet at 6:17 p. m. immediately after turning for the deployment. At this time

fire was opened by the *Marlborough* on a ship stated to be of the *Kaiser* class, at a range of 13,000 yards and on a bearing 20 degrees abaft the starboard beam; this knowledge enables us to deduce the position of the van of the German Battle Fleet at this time.

"Enemy shells had been falling close to the *Colossus* and her 5th Division since 6:18 p. m., and these ships opened fire at 6:30 p. m.; but the conditions of visibility made it difficult to distinguish the enemy's battleships."

* This gave a reserve of 3 knots for maneuvering to confuse the enemy's fire control, to avoid torpedoes, or to clear excessive smoke.

HOOD COMES INTO ACTION

(See diagram No. 13.)

At about 6:16 p. m. in obedience to a signal from Admiral Beatty, Hood turned his squadron to an easterly course and took station ahead of Beatty and at 6:20 engaged enemy battle cruisers at a range of 8,600 yards.*

THE INVINCIBLE BLOWS UP AND SINKS

Admiral Beatty reports:

At 6:25 p. m. I altered course to the E.S.E. in support of the Third Battle Cruiser Squadron, who were at this time only 8,000 yards from the enemy's leading ship. They were pouring a hot fire into her, and caused her to turn to the westward of south. At the same time, I made a visual report to the Commander-in-Chief of the bearing and distance of the enemy Battle Fleet. At 6:33 p. m. *Invincible* blew up.

After the loss of *Invincible*, the squadron was led by *Infexible* until 6:50 p. m. By this time the battle cruisers were clear of our leading battle squadron, then bearing about N.N.W. 3 miles, and I ordered the Third Battle Cruiser Squadron to prolong the line astern and reduced to 18 knots. The visibility at this time was very indifferent, not more than 4 miles, and the enemy ships were temporarily lost sight of.

In his book Admiral Jellicoe says:

"Rear-Admiral Hood, who was on the bridge of the *Invincible* with Captain Cay, hailed Commander Dannreuther, the gunnery officer in the fore control, at about 6:30 p. m., saying, 'Your firing is very good. Keep at it as quickly as you can; every shot is telling.' At about 6:34 p. m. the *Invincible*, which had already been hit more than

* It is not stated whether or not Hood's ships were under fire during this maneuver nor is it known whether his ships counter-marched in succession or turned simultaneously. It appears that in carrying out Admiral Beatty's order Admiral Hood was called upon to perform a difficult piece of seamanship under trying circumstances.

London, June 6—Rear Admiral Sir Hedworth Meux, who was elected to the seat in the House of Commons left vacant by Admiral Lord Charles Beresford when the latter was created a baron and who has become a spokesman for the navy, read at a public meeting to-day the following letter from Vice Admiral Sir David Beatty, who commanded the battle cruiser squadron in the North Sea fight:

"We drew the enemy into the jaws of our fleet. I have no regrets, except for the gallant lives lost, for the pals that have gone and who died gloriously. It would have warmed your heart to have seen how the gallant Hood brought his squadron into action. Would to God he had been more successful in the general result.

"We will be ready for them next time. Please God it will come soon. The battle cruiser fleet is alive and has a very big kick in her."

JELICOE'S BATTLE FLEET AT THE BATTLE OF JUTLAND

1 Div.	2 Div.	3 Div.	4 Div.	5 Div.	6 Div.
(2) King George I (F) (10-13.5 inch)	(3) Orion (F) (10-13.5 inch)	(1) Iron Duke (FF) (10-13.5 inch)	(5) Benbow (F) (10-13.5 inch)	(6) Colossus (12-12 inch)	(7) Marlborough (F) (10-13.5 inch)
Ajax (10-13.5 inch)	Monsie (10-13.5 inch)	Royal Oak (8-15 inch)	Bellerophon (10-12 inch)	Callingswood (10-12 inch)	Revenge (8-15 inch)
Centurion (10-13.5 inch)	Conqueror (10-13.5 inch)	(4) Superb (F) (10-12 inch)	Temeraire (10-12 inch)	Neptune (10-12 inch)	Hercules (10-12 inch)
Edin (10-13.5 inch)	Thunderer (10-13.5 inch)	Canada (10-14 inch)	Famagusta (10-12 inch)	St. Vincent (10-12 inch)	Agincourt (14-12 inch)

- (1) Fleet Flagship, Flag of Admiral Sir John Jellicoe (Commander-in-Chief).
 (2) Flagship of Vice-Admiral Sir W. Jerram, Commanding 2nd Battle Squadron.
 (3) Flagship of Rear-Admiral A. C. Leveson, Rear Admiral in 2nd Battle Squadron.
 (4) Flagship of Rear-Admiral A. L. Buff, Rear Admiral in 4th Battle Squadron.
 (5) Flagship of Vice-Admiral Sir Dovon Sturdee, Commanding 4th Battle Squadron.
 (6) Flagship of Rear-Admiral E. F. A. Gaud, Rear Admiral in 1st Battle Squadron.
 (7) Flagship of Vice-Admiral Sir Cecil Burney, Commanding 1st Battle Squadron and second in command of the Grand Fleet.

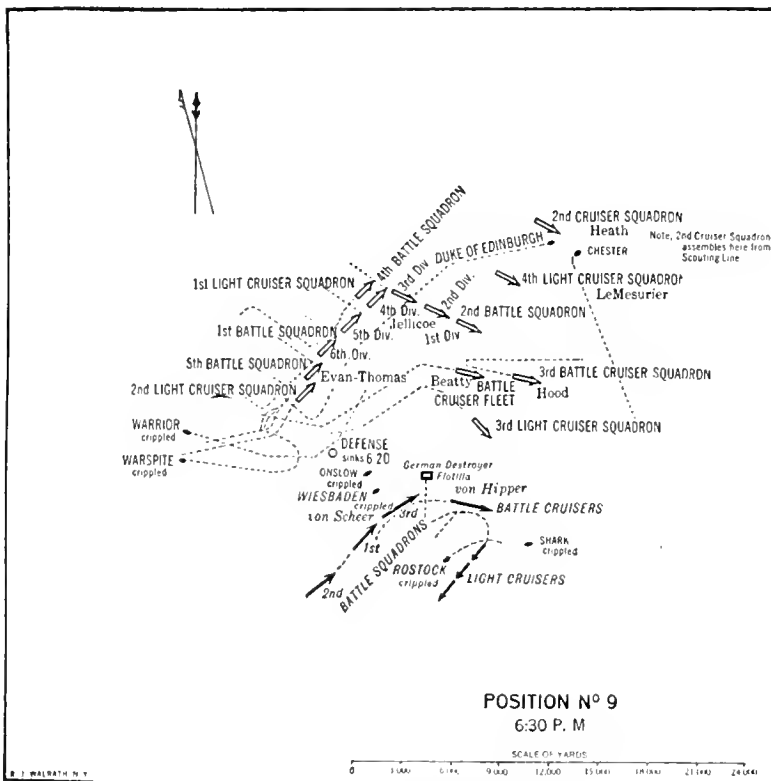
once by heavy shell without appreciable damage, was struck in 'Q' turret. The shell apparently burst inside the turret, as Commander Dannreuther saw the roof blown off. A very heavy explosion followed immediately, evidently caused by the magazine blowing up, and the ship broke in half and sank at once, only two officers, including Commander Dannreuther, and four men being subsequently picked up by the destroyer *Badger*. The British Navy sustained a most serious loss in Read Admiral the Hon. Horace Hood, one of the most distinguished of our young

tion is made in the German report of the British Battle Fleet having been sighted at this time by the German light forces, steering in a westerly or northwesterly direction. The mistaken idea caused the van of the High Sea Fleet to turn off to starboard."

TORPEDO ATTACKS BY BRITISH

Beatty, continuing his report, says:

From the report of Rear-Admiral T. D. W. Napier, M.V.O., the Third Light Cruiser Squad-



flag officers, and in Captain Cay and the officers and men of his flagship.

"The difficulties of distinguishing enemy ships even at the close range of this engagement is revealed by the fact that the officers in the *Invincible* and *Indomitable* were under the impression that they were engaging battle cruisers, whilst officers in the *Inflexible*, stationed between these two ships in the line, reported that her fire was being directed at a battleship of the *Kaiser* or *König* class, and that only one ship could be seen. . . . The ships of the 3rd Battle Cruiser Squadron were undoubtedly mistaken by enemy vessels for the van of our Battle Fleet, since men-

ron, which had maintained its station on our starboard bow well ahead of the enemy, at 6:25 p. m. attacked with the torpedo. *Falmouth* and *Yarmouth* both fired torpedoes at the leading enemy battle cruiser, and it is believed that one torpedo hit, as a heavy underwater explosion was observed. The Third Light Cruiser Squadron then gallantly attacked the heavy ships with gunfire, with impunity to themselves, thereby demonstrating that the fighting efficiency of the enemy had been seriously impaired. Rear Admiral Napier deserves great credit for his determined and effective attack. *Indomitable* reports that about this time one of the

Derfflinger class fell out of the enemy's line.

Meanwhile, at 6:00 p. m. *Canterbury* had engaged enemy light cruisers which were firing heavily on the torpedo-boat destroyers *Shark*, *Acasta*, and *Christopher*; as a result of this engagement the *Shark* was sunk.

At 6:16 p. m. *Defence* and *Warrior* were observed passing down between the British and German Battle Fleets under a very heavy fire. *Defence* was seen to blow up and *Warrior*

ber of enemy submarines in the vicinity of the scene of the action.

THE COURAGEOUS *ONSLOW*

At about 6:05 p. m. *Onslow*, being on the engaged bow of *Lien*, sighted an enemy light cruiser at a distance of 6,000 yards from us, apparently endeavouring to attack with torpedoes. *Onslow* at once closed and engaged her, firing 58 rounds at a range of from 4,000 to 2,000 yards, scoring a number of hits. *Onslow* then closed the enemy battle cruisers, and orders were given for all torpedoes to be fired. At this moment she was struck amidships by a heavy shell, with the result that only one torpedo was fired. Thinking that all his torpedoes had gone, the commanding officer proceeded to retire at slow speed. Being informed that he still had three torpedoes, he closed the light cruiser previously engaged and torpedoed her. The enemy's Battle Fleet was then sighted, and the remaining torpedoes were fired at them; having started correctly, they must have crossed the enemy's attack. Damage then caused *Onslow* to stop.

At 7:15 p. m. *Defender*, whose speed had been reduced to 10 knots, while on the disengaged side of the battle cruisers, by a shell which damaged her foremost boiler, closed *Onslow* and took her in tow. Shell were falling all round them during this operation, which, however, was successfully accomplished. During the heavy weather of the ensuing night the tow parted twice, but was re-secured. The two struggled on together until 1 p. m. 1st June, when *Onslow* was transferred to tugs. I consider the performances of these two destroyers to be gallant in the extreme, and I am recommending Lieutenant-Commander J. C. Tovey of *Onslow*, and Lieutenant-Commander Palmer of *Defender*, for special recognition. *Onslow* was possibly the destroyer referred to by the Rear Admiral Commanding, 3rd Light Cruiser Squadron, as follows:

Here I should like to bring to your notice the action of a destroyer (name unknown) which we passed close in a disabled condition soon after 6:00 p. m. She apparently was able to struggle ahead again; and made straight for the *Derfflinger* to attack her. The incident appeared so courageous that it seems desirable to investigate it further.

THE BATTLE FLEET IN ACTION

Jeilicoe, continuing, says:

"At 6:20 p. m., owing to smoke and mist, it was most difficult to distinguish friend from foe



Rear Admiral Horace Hood

Commander of the British 3rd Battle Cruiser Squadron. In the Battle of Jutland, he was killed while on the bridge of the *Invincible*, just before she blew up.

passed to the rear disabled. It is probable that Sir Robert Arbuthnot, during his engagement with the enemy's light cruisers and in his desire to complete their destruction, was not aware of the approach of the enemy's heavy ships, owing to the mist, until he found himself in close proximity to the main fleet, and before he could withdraw his ships they were caught under a heavy fire and disabled. It is not known when *Black Prince*, of the same squadron, was sunk, but as a wireless signal was received from her between 8 and 9 p. m. reporting the position of a submarine, it is possible that her loss was the result of a torpedo attack. There is much strong evidence of the presence of a large num-

and quite impossible to form an opinion on board the *Iron Duke*, in her position towards the center of the line, as to the formation of the enemy's Fleet. The identity of ships in sight on the starboard beam was not even sufficiently clear for me to permit of fire being opened; but at 6:30 p. m. it became certain that our own battle cruisers had drawn ahead of the Battle Fleet and that the vessels then before the beam were battleships of the *König* class. The order was, therefore, given to open fire,

appeared as if all the enemy ships at that time in sight from the *Iron Duke* (not more than three or four, owing to smoke and mist) were receiving heavy punishment, and the second battleship was seen to turn out of the line badly on fire, and settling by the stern.

VARYING VISIBILITY

"The visibility was very variable and perhaps averaged about 12,000 yards to the south-



© Underwood and Underwood.

Veterans of the Battle of Jutland

and the *Iron Duke* engaged what appeared to be the leading battleship at a range of 12,000 yards on a bearing 20 degrees before the starboard beam; other ships of the 3rd and 4th Divisions (the 4th Battle Squadron) opened fire at about the same time, and the van divisions (2nd Battle Squadron) very shortly afterwards; these latter ships reported engaging enemy battle cruisers as well as battleships. The fire of the *Iron Duke*, which came more directly under my personal observation, was seen to be immediately effective, the third and fourth salvos fired registering several palpable hits. It

ward, though much less on other bearings, but ranges could not at times be obtained from the range-finders of the *Iron Duke* at a greater distance than 9,000 yards, although at 7:15 p. m., in a temporary clear channel through the mist, good ranges of 15,000 yards were obtained of a battleship at which four salvos were fired by the *Iron Duke* before she was again hidden by smoke and mist.

"The visibility at the rear of the battle line was apparently greater than in the center at about 7 p. m., and the enemy's fire, which was probably being concentrated on our rear ships,

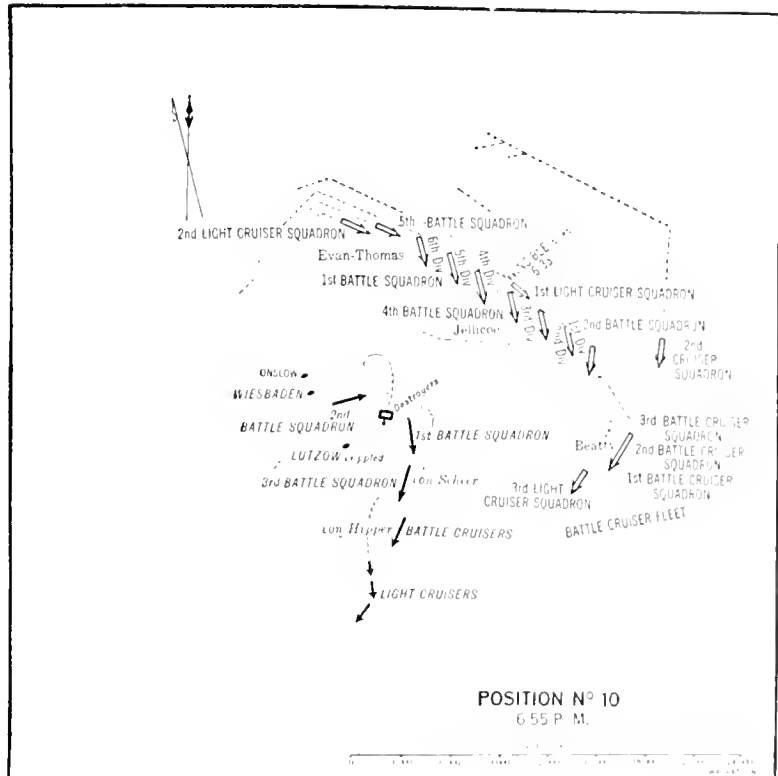
was more accurate at this period, but quite ineffective, only one ship, the *Colossus*, being hit by gun fire, although numerous projectiles were falling near the ships of the 1st and 5th Battle Squadrons.

"Whilst observers in ships in the van and center of the Battle Fleet could see only three or four enemy vessels at any one time, those in the ships of the rear division did occasionally see as many as eight, and were consequently better able to distinguish the formation and movements of the enemy's Battle Fleet. It was

that the enemy should be closed more rapidly by the whole Battle Fleet. (See diagram No. 14.)

"This large turn (of 4 points) 'by divisions' involved some small amount of 'blanketing' of the rear ships of one division by the leading ships of that next astern, and at one time the *Thunderer* was firing over the bows of the *Iron Duke*, causing some slight inconvenience on the bridge of the latter ship; the 'blanketing,' however, was unavoidable and the loss of fire involved was inappreciable.

DIAGRAM NO. 14.—
The British Battle Fleet
(Jellicoe) changes course
to south by divisions
in order to close the enemy.



not possible, owing to the small number of ships in sight, due to smoke and mist, to distribute the fire of the battleships by signal in the customary manner; the only course to adopt was for the captains to direct the fire of their guns on to any target which they could distinguish.

"At 6:50 p. m., as the range was apparently opening, the course was altered by signal to south 'by division' in order to close the enemy. The *King George V.*, leading the van of the Battle Fleet, had just anticipated this signal by turning to south. The alteration was made 'by divisions' instead of 'in succession' in order

ENEMY ATTACKS WITH TORPEDOES

"At 6:45 p. m. one or two torpedoes crossed the track of the rear of our battle line, and the *Marlborough* altered course to avoid one. They were apparently fired, at long range, by enemy destroyers, which were barely visible to the ships in rear and quite invisible to those on board the *Iron Duke*. They might, however, have been fired by enemy battleships which were within torpedo range, or by a submarine, the *Revenge* reporting that it was thought that one had been rammed by that ship. The tracks of some of the torpedoes were seen by the observers

stationed aloft, and were avoided by very skilful handling of the ships by their captains.

"At 6:45 p. m., however, a heavy explosion occurred under the fore bridge of the *Marlborough*, abreast the starboard forward hydraulic engine room. The ship took up a list of some seven degrees to starboard, but continued in action so effectively that she avoided three more torpedoes shortly afterwards, re-opened fire at 7:03 p. m., and at 7:12 p. m. fired fourteen rapid salvos at a ship of the *König* class, hitting

GUNFIRE EFFECTIVE DESPITE DIFFICULTIES

(See diagram No. 15)

"In spite of the difficult conditions the fire of many of our battleships was very effective at this period. Some instances may be given. At 7:15 p. m. the *Iron Duke*, as already mentioned, engaged a hostile battleship at 15,000 yards' range and on a bearing 74 degrees from right ahead. At 7:20 she trained her guns on a battle cruiser of *Lützow* type, abaft the beam,

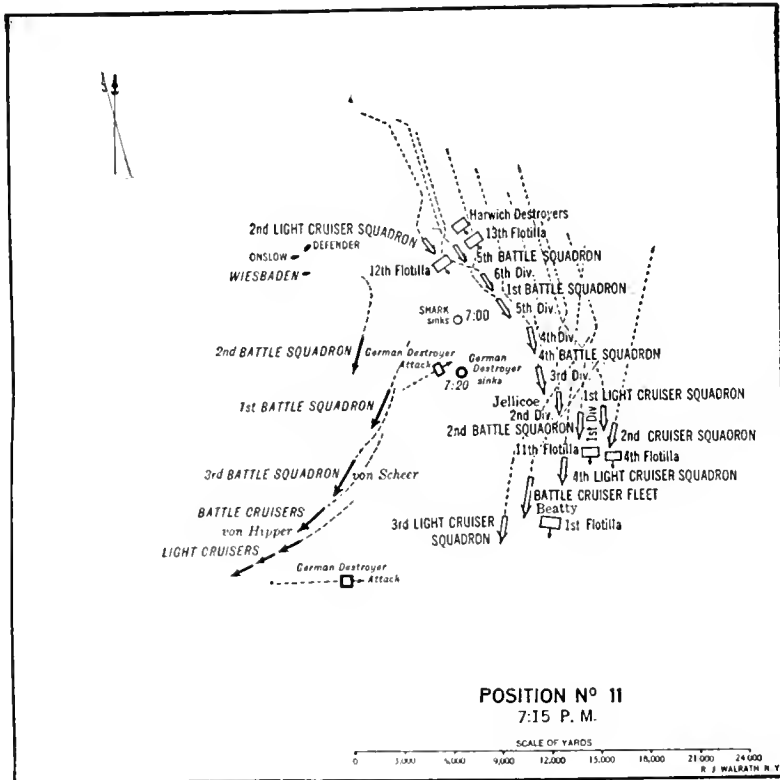


DIAGRAM No. 15.—
At 7:15 the fire of British Battle Fleet is effective. The German fleet turns away to the southwest while German destroyers advance to attack.

her so frequently that she was seen to turn out of line.

"At 7 p. m. Sir David Beatty signaled reporting that the enemy was to the westward.

"Our alteration of course to south had, meanwhile, brought the enemy's line into view once more, and between 7:00 and 7:30 p. m. the Battle Fleet was again in action with battleships and also battle cruisers, as they could be distinguished in the haze, which at that period was very baffling. The range varied from as much as 15,000 yards at the van to as little as 8,000 in the rear, this difference in range indicating that the enemy's Fleet was turning to the westward, as shown in the accompanying plan.

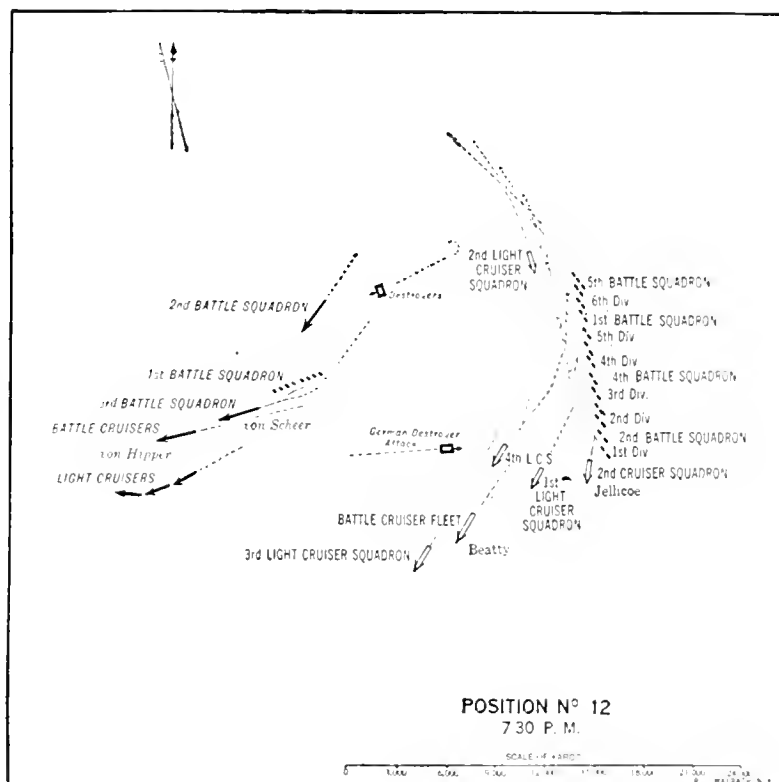
which hid herself by a destroyer smoke screen; at 7:17 p. m. the *King George V.* opened fire on a vessel, taken to be the leading ship in the enemy's line, at a range of about 13,000 yards; the *Orion* at a battleship*; the *St. Vincent* was 'holding her target (a battleship) effectively till 7:26 p. m., the range being between 10,000 and 9,500 yards'; the *Agincourt* at 7:06 p. m. opened fire at 11,000 yards on one of four battleships that showed clearly out of the mist, and judged that at least four of her salvos 'straddled' the target; the *Revenge* was engaging what were

* The *Calliope* reported at 7:01 p. m.: "Two enemy battleships, *König* class, engaged by *Orion's* division, observed to be heavily on fire."

taken to be battle cruisers, obtaining distinct hits on two of them; the *Colossus* from 7:12 to 7:20 p. m. was engaging a ship taken to be a battle cruiser, either the *Derfflinger* or *Lützow*, at ranges between 10,000 and 8,000 yards, and observed several direct hits, two being on the water line; whilst the *Marlborough*, as already mentioned, 'engaged a ship of the *König* class.' Other vessels reported being in effective action

in order to turn on to the submarine and bring the ships in line ahead, ready for any required maneuver. A heavy fire was opened on the destroyers at ranges between 10,000 and 6,500 yards. At the latter range the destroyers turned and passed towards the rear of the line in a heavy smoke screen. One destroyer was seen by several observers to sink from the effects of the gun fire.

DIAGRAM No. 16.—
Jellicoe turns his battle-ships away to avoid the German torpedoes and the enemy fleet retreats to the westward.



during this period. The *Royal Oak*, the ship next astern of the *Iron Duke*, opened fire at 7:15 p. m. on the leading ship of three vessels taken to be battle cruisers, at a range of 14,000 yards; this ship was hit and turned away, and fire was shifted to the second ship which was lost to sight in the mist after a few rounds had been fired.

"At 7:05 p. m. the whole battle line was turned together three more points to starboard to close the range further; immediately afterwards two ships ahead of the *Iron Duke* reported a submarine a little on the port bow; at 7:10 p. m. a flotilla of enemy destroyers, supported by a cruiser, was observed to be approaching on a bearing S. 50 W. from the *Iron Duke*, and the Fleet was turned back to south

JELICOE TURNS FLEET TO AVOID TORPEDOES

(See diagram No. 16)

"At a sufficient interval before it was considered that the torpedoes fired by the destroyers would cross our line, a signal was made to the Battle Fleet to turn 2 points to port by subdivisions. Some minutes later a report was made to me by Commander Bellairs (the officer on my Staff especially detailed for this duty and provided with an instrument for giving the necessary information) that this turn was insufficient to clear the torpedoes, as I had held on until the last moment; a further turn of 2 points was then made for a short time. As a result of this attack and another that followed immediately,

some twenty or more torpedoes were observed to cross the track of the Battle Fleet, in spite of our turn, the large majority of them passing the ships of the 1st and 5th Battle Squadrons at the rear of the line. It was fortunate that, owing to the turn away of the Fleet, the torpedoes were apparently near the end of their run, and were consequently not running at high speed. They were all avoided by the very skillful handling of the ships by their captains, to whom the highest credit is due, not only for their skill in avoiding the torpedoes, but for the manner in which the ships, by neighborly conduct towards each other, prevented risk of collision and kept their station in the line. The captains were most ably assisted by the admirable look-out kept by the organization that existed for dealing with this danger.

"The skill shown could not, however, have prevented several ships from being torpedoed had the range been less and the torpedoes consequently running at a higher speed. Frequent exercises carried out at Scapa Flow showed conclusively that the percentage of torpedoes that would hit ships in a line when fired from destroyers at ranges up to 8,000 yards was comparatively high, even if the tracks were seen and the ships were maneuvered to avoid them. One very good reason is that torpedoes are always a considerable but varying distance ahead of the line of bubbles marking their track, making it difficult to judge the position of the torpedo from its track.

"The first two-point turn was made at 7:23 p. m. and the Fleet was brought to a south by west course by 7:33 p. m. (that is, to a course 1 point to the westward of the course of the Fleet before the destroyer attack). The total amount by which the range was opened by the turns was about 1,750 yards.

"The 4th Light Cruiser Squadron and the 4th and 11th Flotillas had been delayed in reaching their action station at the van until about 7:10 p. m., owing to the turns to the westward made by the Battle Fleet to close the enemy. In accordance with arrangements made previously to counter destroyer attacks, these vessels were ordered out to engage the enemy destroyers, which, according to the report of the Commodore Le Mesurier, commanding the 4th Light Cruiser Squadron, were steering towards the head of the division led by the *King George V.*, the van ship of the Battle Fleet. Although not very well placed for the first attack for the reason given above, they were in a very favorable position to counter the second destroyer attack, which took place at 7:25 p. m. The enemy's flotilla was sighted bearing 30 degrees before the starboard

beam of the *Iron Duke* at a range of 9,000 yards and was heavily engaged by the light forces and the 4th, 1st, and 5th Battle Squadrons.

THREE ENEMY DESTROYERS SUNK

"During this attack three enemy destroyers were reported as sunk by the fire of the battleships, light cruisers and destroyers; one of them, bearing a Commodore's pendant, being sunk at 7:50 p. m. by a division of the 12th Flotilla, consisting of the *Obedient*, *Marvel*, *Mindful* and *Onslaught*, which attacked them near the rear of our battle line. The *Southampton* and *Dublin*, of the 2nd Light Cruiser Squadron, attacked and sank a second destroyer at this period. At least six torpedoes were observed to pass ahead of, or through the track of, the 4th Light Cruiser Squadron during their attack on the German flotilla.

SCHIEER RETIRES UNDER COVER OF SMOKE SCREEN

(See diagram No. 17)

"Destroyer attacks were combined with a retiring movement on the part of the enemy's Battle Fleet, the movement being covered with the aid of a heavy smoke screen. Although this retirement was not visible from the *Iron Duke* owing to the smoke and mist, and was, therefore, not known to me until after the action, it was clearly seen from the rear of our line.

"In the German account of the action at this stage, it is stated, in more than one passage, that the British Fleet during this action between the Battle Fleets was to the northward of the High Sea Fleet. This is correct of the earlier stages. The account refers to the attacks on our line by the German destroyer flotillas, and states finally that in the last attack the destroyers did not sight the heavy ships, but only light cruisers and destroyers to the northeastward. The accuracy of this statement is doubtful, since the destroyers were clearly in sight from our heavy ships. But the account then proceeds to state that 'the German Commander-in-Chief turns his battle line to a southerly and south-westerly course on which the enemy was last seen, but he is no longer to be found.'

"This is illuminating. It is first stated that our ships bore north and northeast from the enemy and then that the enemy turned to south and southwest, that is, *directly away from the British Fleet*. Thus the fact that the German Fleet turned directly away is confirmed by Germans.

"No report of this movement of the German Fleet reached me, and at first it was thought that his temporary disappearance was due to



By the way...

Building a Battleship



the thickening mist, especially as firing could be heard from the battleships in rear, but at 7:41 p. m., the enemy Battle Fleet being no longer in sight from the *Iron Duke*, course was altered 'by divisions' three points more to starboard (namely, to southwest) to close the enemy, and single line ahead was again formed on the *Iron Duke* on that course.

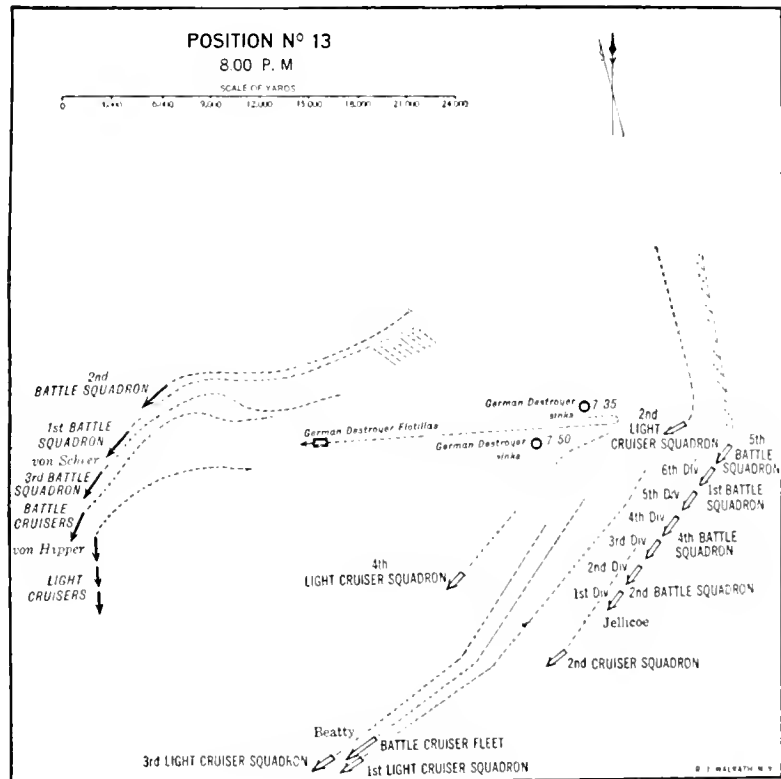
"At this period the rear of our battle line was still in action at intervals with one or two ships of the enemy's fleet, which were probably some that had dropped astern partially disabled,

JELlicoe TURNS WEST IN PURSUIT OF ENEMY

(See diagram No. 18)

"At this time the enemy's Battle Fleet seems to have become divided, for whilst Sir David Beatty reported the presence of battleships northwest by west from the *Lion*, other enemy battleships were observed to the westward (that is, on the starboard bow of the *Iron Duke*), and the course of the Fleet was at once altered 'by divisions' to west in order to close the enemy; this alteration was made at 7:59 p. m.

DIAGRAM No. 17.—
Immediately after the enemy torpedo attack is spent, Jellicoe hauls back to a southwesterly course and attempts to regain touch with von Scheer, who continues to retreat under cover of a smoke screen.



but by 7:55 p. m. their fire had practically ceased.

"At about 7:40 p. m. I received a report from Sir David Beatty stating that the enemy bore northwest by west from the *Lion*, distant 10 to 11 miles, and that the *Lion's* course was southwest. Although the battle cruisers were not in sight from the *Iron Duke*, I assumed the *Lion* to be five or six miles ahead of the van of the Battle Fleet, but it appeared later from a report received in reply to directions signaled by me at 8:10 p. m. to the *King George V.* to follow the battle cruisers, that they were not in sight from that ship either.

"It will be observed that all the large alterations of course of the Battle Fleet during the engagement were made 'by divisions' instead of 'in succession from the van, or together.' The reason was that in this way the whole Fleet could be brought closer to the enemy with far greater rapidity, and in a more ordered formation, than if the movement had been carried out by the line 'in succession.'

"The objection to altering by turning all ships together was the inevitable confusion that would have ensued as the result of such a maneuver carried out with a very large Fleet under action conditions in misty weather, particularly if the

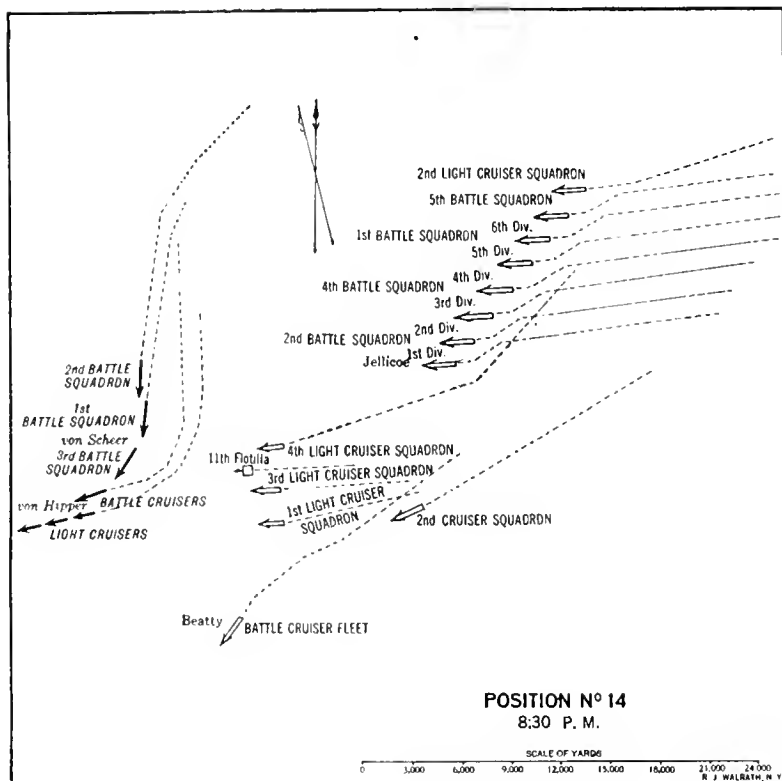
ships were thus kept on a line of bearing for a long period.

"The battleships sighted at 7:59 p. m. opened fire on the ships of the 4th Light Cruiser Squadron, which had moved out to starboard of the battle line to engage a flotilla of enemy destroyers which were steering to attack the Battle Fleet. The *Calliope*, the flagship of Commodore Le Mesurier, was hit by a heavy shell and received some damage, but retained her fighting efficiency, and fired a torpedo at the

ships then in sight turned eight points together away from the *Falmouth*.

"At 8:30 p. m. the light was failing and the Fleet was turned 'by divisions' to a southwest course, thus reforming single line again.

"At first, touch with the enemy was lost owing to the large alterations of course carried out by the High Sea Fleet, but it was regained at 7:12 p. m., the battle cruisers opening fire at 7:14 p. m., though only for two and a half minutes, and increasing speed to 22 knots. At this pe-



leading battleship at a range of 6,500 yards; an explosion was noticed on board a ship of the *Kaiser* class by the *Calliope*.* The ships sighted turned away and touch could not be regained, although sounds of gun fire could be heard from ahead at 8:25 p. m., probably from our battle cruisers, which obtained touch with and engaged some of the enemy's ships very effectively between 8:22 and 8:25 p. m. The *Falmouth* was the last ship of the Battle Cruiser Fleet to be in touch with the enemy, at 8:38 p. m.; the

* All our battle cruisers felt this heavy explosion, which was clearly concussion under water, and may have been caused by the *Calliope*'s torpedo obtaining a hit.

riod the battle cruisers were steering southwest by south to southwest, and this course took them from the port to the starboard bow of the Battle Fleet by 7:12 p. m. The movements of our battle cruisers, which were at this time between four and five miles ahead of the van of the Battle Fleet, could not be distinguished, owing, partly, to the funnel and cordite smoke from the battle cruisers themselves, but even more to the funnel smoke from the numerous cruisers, light cruisers and destroyers which were attempting to gain their positions ahead of the van.

"The movements of the enemy's Fleet could

not be distinguished from our Battle Fleet owing again to their own funnel and cordite smoke, and, also, to the smoke screens which ships and destroyers were making to conceal their movements."

The attached cruisers *Boadicea*, *Active*, *Blanche* and *Bellona* carried out their duties as repeating ships with remarkable rapidity and accuracy under difficult conditions. (Repeating ships are so stationed as to facilitate the transmission of the signals of the Commander-in-Chief to all ships.)

BATTLE CRUISERS ACTIVE IN VAN AFTER 7 P.M.

Vice Admiral Beatty reports:

Between 7 and 7:12 p. m. we hauled round gradually to S.W. by S. to regain touch with the enemy, and at 7:14 p. m. again sighted them at a range of about 15,000 yards. The ships sighted at this time were two battle cruisers and two battleships, apparently of the *König* class. No doubt more continued the line to the northward, but that was all that could be seen. The visibility having improved considerably as the sun descended below the clouds, we reengaged at 7:17 p. m. and increased speed to 22 knots. At 7:32 p. m. my course was S.W., speed 18 knots, the leading enemy battleship bearing N.W. by W. Again after a very short time the enemy showed signs of punishment, one ship being on fire while another appeared to drop right astern. The destroyers at the head of the enemy's line emitted volumes of gray smoke, covering their capital ships as with a pall, under cover of which they undoubtedly turned away, and at 7:45 p. m. we lost sight of them.

At 7:58 p. m. I ordered the 1st and 3rd Light Cruiser Squadrons to sweep to the westward and locate the head of the enemy's line, and at 8:20 p. m. we altered course to west in support. We soon located two battle cruisers and battleships, and more heavily engaged at a short range of about 10,000 yards. The leading ship was hit repeatedly by *Lion* and turned away 8 points, emitting very high flames and with a heavy list to port. *Princess Royal* set fire to a three-funneled battleship; *New Zealand* and *Indomitable* report that the third ship, which they both engaged, hauled out of the line, heeling over and on fire. The mist which now came down enveloped them, and *Falmouth* reported they were last seen at 8:38 p. m. steaming to the westward.

DISCUSSION OF THIRD PHASE

In deploying the dreadnought squadrons into battle line at 6:16, Admiral Jellicoe was greatly handicapped by meager and inaccurate information. It was expected that ships steering various courses in action would be somewhat out in their reckoning, but when contact actually took place it was found that the positions given the Commander-in-Chief by the Battle Cruiser Fleet were at least twelve miles in error. The result was the enemy Battle Fleet bore on the starboard bow instead of ahead. At 5:50 the Commander of the 2nd Light Cruiser Squadron made a report which indicated that the German Battle Fleet was ahead of the battle cruisers. These conflicting reports added greatly to the perplexity of the situation. Admiral Jellicoe reports that it was 6:14 when he received the first information on which he could take effective action for deployment. This directs attention to the fact that the advanced scouting forces of the Grand Fleet, although they made and maintained contact with the enemy, failed in the important mission of keeping the Commander-in-Chief accurately informed of the situation during the battle approach. This resulted in a most unfortunate delay in bringing the guns of the Battle Fleet on the enemy.

The following is a *précis* of Admiral Jellicoe's description of the Fleet's deployment:

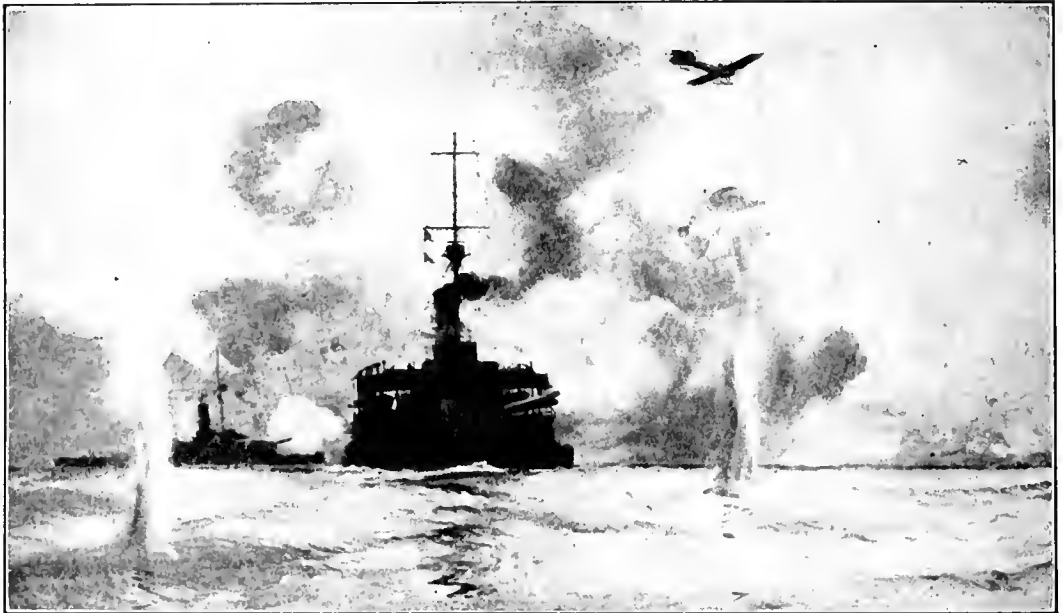
At 6:14 when the first definite information was received by Admiral Jellicoe of the German Battle Fleet, quite close aboard on the starboard bow, he felt the danger that the starboard wing column might be engaged by the entire enemy Fleet before deployment could be completed. The urgent question was on which wing to form the battle line. To form on the starboard wing would bring the Fleet into action at the earliest possible moment, but other considerations influenced Admiral Jellicoe at 6:16 to make the signal to form battle line on the port wing on course southeast by east. The deployment was completed at 6:38 when the last division swung into the battle line.

The reasons given by Admiral Jellicoe for using this method of deployment may be summarized as follows:

In the first place, it was assumed that the

German destroyers would be ahead of their Battle Fleet, and as the mist favored torpedo attack it was considered unwise to risk having the Grand Fleet thrown into confusion at a critical moment. Secondly, there was the danger that enemy fire concentrated on the right wing, composed of many of the weakest British ships, might administer severe punishment before an effective return fire could be opened. Thirdly, deployment on the starboard wing would place the enemy in an overlapping position, ahead of the Grand Fleet, and favorably

that von Hipper probably turned his battle cruisers completely around twice in the space of about fifteen minutes. On the other hand, the British Forces were also somewhat mixed at this time. Both sides appear to have had considerable difficulty in getting bearings and distinguishing friend from foe. Had Jellicoe continued at full speed or deployed on his starboard wing, what would have happened constitutes interesting subject matter for speculation and conjecture. In considering this topic, however, it is well to bear in mind that the



British Warships Shelling a German Cruiser in the Battle of Jutland

placed for swinging their van to the left to cross the T. Had this maneuver been attempted the British van would have been compelled to make a wide turn to the left to frustrate it, thereby presenting a complicated situation to the confusion of the British fire control. And lastly, since German gun fire had always been particularly good at the start, Admiral Jellicoe considered it bad tactics to give the enemy any initial advantage in regard to either gunnery or torpedo attack.

Beatty's dash across the head of the enemy column combined with Hood's similar maneuver with his advance forces from the opposite direction, unquestionably threw the enemy van into confusion, as is clearly shown by the report

German ships had demonstrated their fighting ability and also seemed to be at their best when quickly closed.

Also much criticism has been leveled at Jellicoe's turning-away tactics to avoid torpedo attack. Very likely these questions will never be settled to the satisfaction of every one, but, for the time being at least, until more information is available, naval men will be inclined to suspend judgment.*

* The British casualties at the battle of Jutland were 6,688, of whom 6,014 were killed or drowned, and 674 wounded. Approximately 60,000 officers and men served in the Grand Fleet. The percentage of casualties represented 11.14 per cent. of the force engaged. The corresponding figure at Trafalgar was 9.51; at Camperdown 70.03; at the Nile 11.22. From these figures the conclusion is justified that naval warfare of the present age is far more deadly than it was in the days of old.

IV

FOURTH PHASE

TORPEDO ATTACKS AND FIGHTING DURING
THE NIGHT OF MAY 31ST TO JUNE 1ST

AT the end of the Third Phase, which completed the day's fighting, the British Battle Fleet was in position to cut off the enemy, whether Scheer headed direct for Heli-goland, or followed the Horn Reef route, or attempted to return through the swept channel which he was known to have used along the coast of the West Frisian Islands. At this time both fleets were in some disorder.

Admiral Jellicoe estimated that the enemy Fleet was well to the westward and ahead, although a few crippled ships with reduced speed might have been to the northward. He decided not to seek a night action between the heavy ships for the following principal reasons: He did not wish to subject the Battle Fleet to night attack by the large enemy destroyer force. Although the Admiral states that he would not have wished to court this menace under any circumstances, he adds that his decision against it was reinforced by the fact that at this time the British heavy ships were not equipped with the best type of destroyer defense apparatus. On the British ships, the searchlights with their control arrangements were inferior and the installation of director firing-gear had just been begun, while it was known that the German organization for night action was efficient. Enemy searchlights were very powerful, and the Germans had perfected a fire-control system by which both searchlights and guns were quickly brought to bear on any vessel sighted. They also possessed star shell, which, during the night fighting, proved valuable in locating attacking destroyers without revealing the enemy positions. If destroyers were disposed at night to counter enemy destroyer attack, there would be great risk of their being mistaken for enemy destroyers, and fired upon by their own capital ships. It was considered inadvisable, therefore, to risk the issue on a night battle between heavy ships, necessarily fought at close range, the decision depending on the course of events in the first few minutes wherein the greater efficiency of German searchlights and German

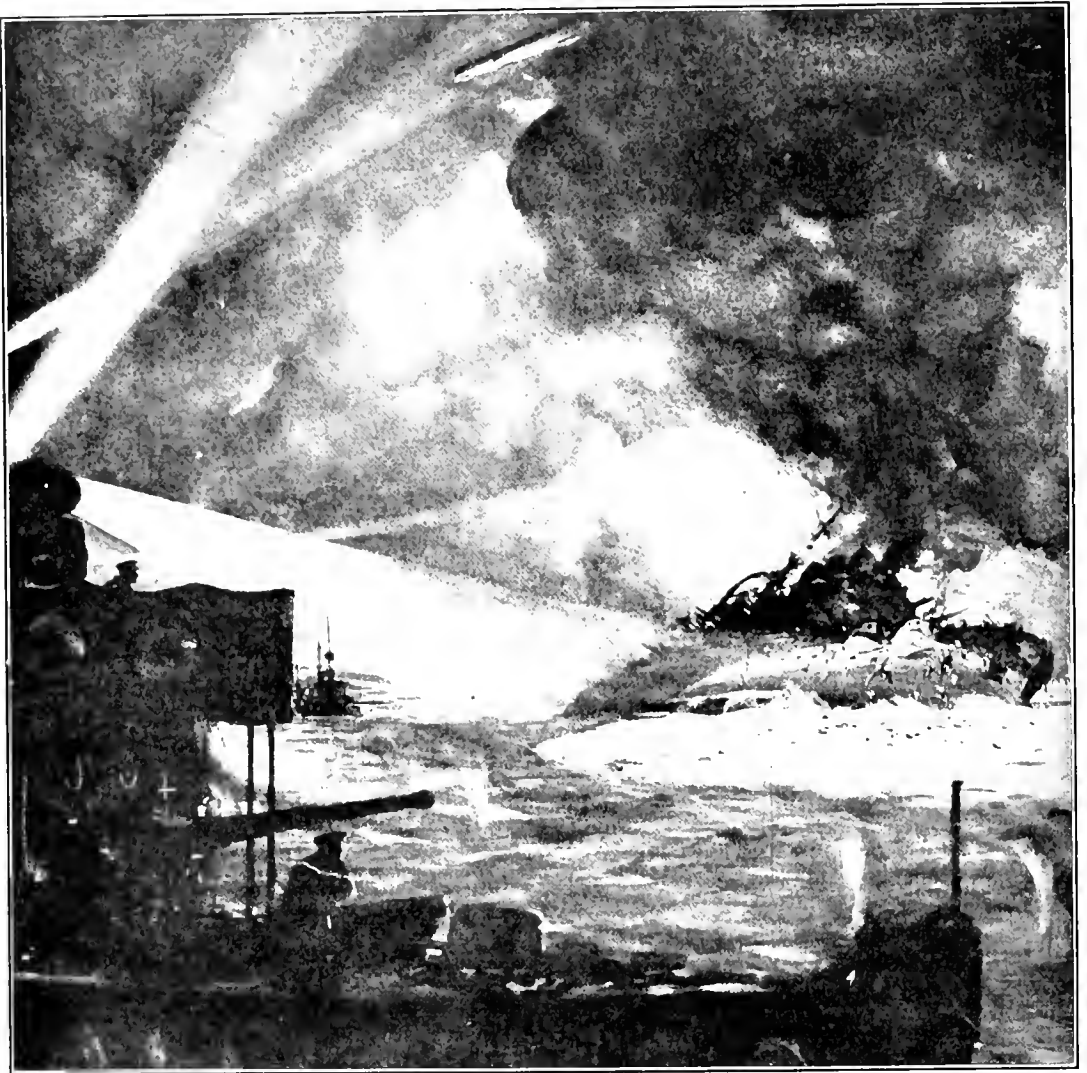
fire control would constitute an important advantage.

Admiral Jellicoe at 9 p. m. signaled the Battle Fleet to change course by divisions to south. The flotillas and light cruisers were disposed in the direction of the enemy where they would afford protection to the Fleet from enemy destroyer attack without incurring the danger of being fired upon by the British battleships, at the same time being favorably placed for attacking the enemy heavy ships. The Battle Fleet assumed cruising formation for the night.

THE DESTROYERS IN ACTION

On the turn of the fleet to the southward for the night, the destroyer flotillas were in position five miles astern of the battleships, as we learn from Admiral Jellicoe's book. A few minutes after 10 o'clock, Commodore Hawkesley, on board the *Castor*, in command of the flotillas, sighted three or more enemy cruisers, which almost immediately opened fire with such accuracy that the *Castor* was hit, her wireless being put out of commission. The *Castor*, the *Magic* and the *Marne* fired torpedoes at the enemy. There was a violent detonation and the enemy disappeared, as Admiral Jellicoe reported. Soon after, the *Castor* opened all guns at point blank range on an enemy destroyer, which was not seen afterwards. About the same time the 2nd Light Cruiser Squadron engaged five enemy cruisers. The German fire was rather remarkable for its accuracy. In fifteen minutes it had done considerable damage to the *Southampton* and *Dublin*, the two leading ships, and there were fairly heavy casualties. The enemy then disappeared, with the probable loss of the cruiser *Frauenlob*. Enemy cruisers opened fire on the 4th Flotilla an hour later (11:30 p. m.). The *Tipperary* was severely damaged. The *Brooke* was so injured in her steering gear that she rammed the *Sparrowhawk*, which had to be abandoned next morning. The *Spitfire*, after torpedoing a four-funneled cruiser, collided with a German light cruiser and carried off some twenty feet of her skin plating.

The enemy's 2nd Battle Squadron was encountered by the remainder of the 4th Flotilla, about midnight, and one ship (presumably the *Pommern*) was torpedoed and sunk, possibly



From the *London Times History*.

The Battle of Jutland

The scene during the night as described by an eye-witness. The main action ceased as night closed down, but the destroyers continued their deadly work, the searchlights flashing in all directions.

by the *Ardent*. A little later, in action against enemy battleships, the *Ardent* was sunk by concentrated fire, there being but two survivors of her personnel.

The *Turbulent* was rammed and sunk by a large vessel that crossed the rear of the flotilla at high speed. At 2 o'clock in the morning the 12th Flotilla engaged an enemy battle squadron at a 3,000-yard range, and destroyed the third ship in the line. Light cruisers drove off the destroyers, not, however,

preventing the somewhat isolated *Marne* from sinking the fourth ship of the line, with a well-directed torpedo. At 2:35 o'clock the *Moresby* fired a torpedo at a battleship of the *Deutschland* class, and an explosion was subsequently heard.

These are the bald facts of the night performance by the flotillas that, as Admiral Jellicoe declares, was "characterized by the splendid dash, skill and gallantry for which our destroyers had been conspicuous through-

out the war. They were ably led and achieved magnificent work under very difficult conditions."

The toll of German vessels was not positively ascertained. The enemy reports were not trustworthy, but Admiral Jellicoe states that "information after the action made it certain that at least four battleships of the dreadnought type were hit by torpedoes, in addition to the pre-dreadnought battleship *Pommern*, which was admitted to have been sunk, as was the light cruiser *Rostock*."

MOVEMENTS OF THE FLEET—JUNE 1, 1916

As dawn was breaking, 2:47 o'clock, the Fleet altered its course to north, and formed single line ahead—2nd Battle Squadron, 4th Battle Squadron and 7th Squadron (less the 6th Division). The 5th Battle Squadron rejoined at 3:30 a. m., taking station ahead of the 2nd Battle Squadron.

It was misty weather, the range of visibility being less than four miles, but Jellicoe took this greater risk of a long line in weather favorable to submarines because he wished to be ready to fight if the enemy Battle Fleet were suddenly sighted. During the night Jellicoe had changed his intention of continuing southward, owing to the great difficulties in collecting the Fleet (particularly the destroyers which had been heavily engaged), and the undesirableness of the Battle Fleet closing the Horn Reef at daylight. Those considerations determined the course north, it being necessary to concentrate the Battle Fleet and the destroyers before renewing action.

But by the time the concentration was effected it had become apparent that the High Sea Fleet, steering for the Horn Reef, had passed behind the shelter of the German mine fields in the early morning on the way to their ports.

The sight of a Zeppelin, and its engagement by the 3rd Light Cruiser Squadron, caused an alteration of course to west at 3:44 a. m. in the belief that the Zeppelin might indicate the presence of the High Sea Fleet. That proving not to be the case, course was altered back to north. As the destroyers had not been met, course was altered south-east at 6 a. m., but at 7:15 a. m. it was north

again. At 8:15 a. m. the Battle Fleet was in Lat. 55.54 N. Long., and between then and 9 a. m. a considerable amount of wreckage was passed (including that of the destroyer *Ardent*) and the bodies of dead German blue-jackets were seen floating. Drifting mines were seen in considerable numbers during the whole forenoon.

By noon it was evident that all disabled enemy vessels had either sunk or had passed inside the mine fields en route to their bases, and that the enemy fleet was returning to port. Accordingly Admiral Jellicoe decided to return with the whole fleet and gave orders to that end.

The British Fleet arrived at its base June 2nd, fueled, and was reported ready for sea at four hours' notice at 9 p. m. of that day.

DISCUSSION OF FOURTH PHASE

It will be noted that it was the destroyers and cruisers toward the eastward end of the British line which made contact during the night with German heavy ships. This indicates that von Scheer was heading for Heligoland via the Horn Reef passage. (A few ships apparently passed through the Skaw.)

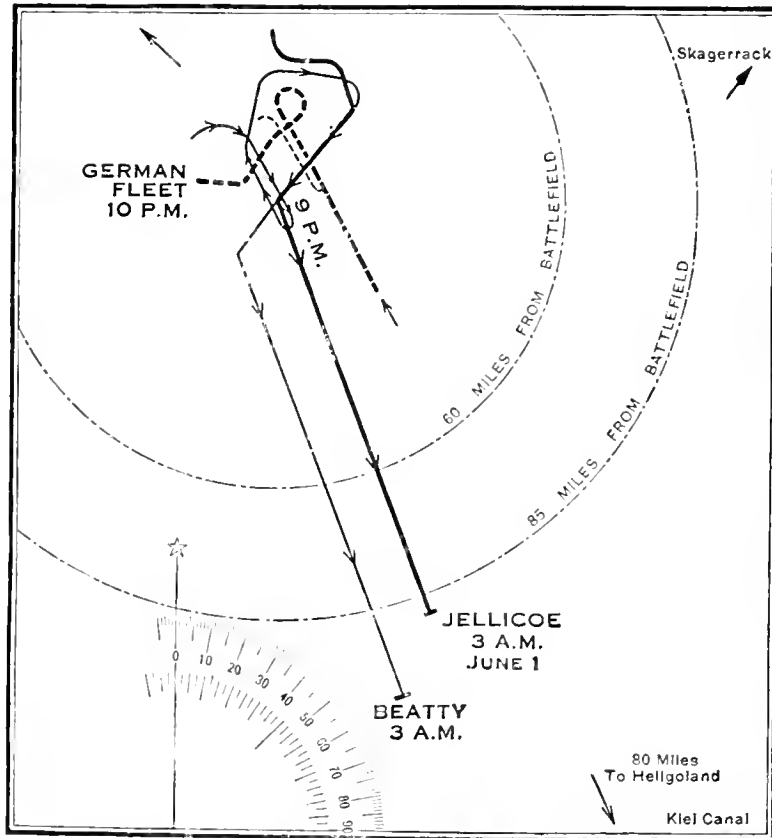
The conduct of the British fleet on the evening of May 31st, during the night, and on the morning of June 1st raises a good many perplexing questions. In the morning the British ships retraced their tracks to the northward, taking about the same lane they had followed in the night.

Many people are puzzled that, with the Grand Fleet in position to put itself between the German High Seas Fleet and its bases, there was no decisive engagement on the following day, June 1st. A study of the chart indicates that the Fleets could not have been very far apart. Considering that the June nights between evening and morning twilight are only five hours long in these latitudes, and also considering the numerous scouts, both German and British, it looks as though they should have been pretty well informed of each other's whereabouts. But before criticizing Admiral Jellicoe for not pressing a renewal of the engagement, it might be well to reflect upon the conditions confronting him on that morning: Visibility only three to four miles; close to enemy bases and com-

paratively far from home bases; a Fleet somewhat knocked about after the previous day's fighting, and no doubt a number of the ships short of both fuel and ammunition; destroyers and light cruisers scattered, many more or less damaged, and perhaps the majority with torpedoes expended; an enemy skilled in the use of submarines and mines.

ing of June 1st except on terms of his own choosing.

It is hard for persons unused to the sea to visualize the conditions and circumstances attending this engagement. Even seagoing men of excellent balance are liable, when transplanted temporarily to the tranquillity of a war college, to be somewhat influenced by en-



From *Sea Power in the War* (Doran).

The Battle of Jutland

Track of the Fleets during the night.

DESK THEORY AND SEA ACTION NOT ONE

It is evident that Admiral Jellicoe was ready to resume the battle the next morning if the German Fleet would accept his challenge; but he did not wish to play into the enemy's hand by seeking an engagement on the selected terms of Admiral von Scheer because of the menace of mine and submarine traps. It is also evident that Admiral von Scheer did not wish to resume the fighting on the morn-

vironment, and, while in enthusiastic search of illustration for pet theories, they may overlook or fail to give due weight to modifying factors which cannot be simulated on the game-board. Students of tactics on shore make their decisions after study and discussion in the comfortable quiet of a well-lighted room, and then use T square and ruler to move their miniature ships on a motionless wooden ocean. The fighters of the Jutland battle faced quite a different proposition. Decisions had to be

made quickly, accurately transmitted by signal, and promptly carried out on a sea darkened by mist, smoke, and approaching night. All this had to be done, moreover, in the midst of battle, under the strain of apprehension, in the uncertainties of meager and conflicting information.

The actual results of the Battle of Jutland did not change the military situation. The British control of the sea remained an absolute factor, as before the battle, and the German High Sea Fleet continued to be a fleet in being and a menace to its enemies. Consequently the battle must be classed as indecisive.

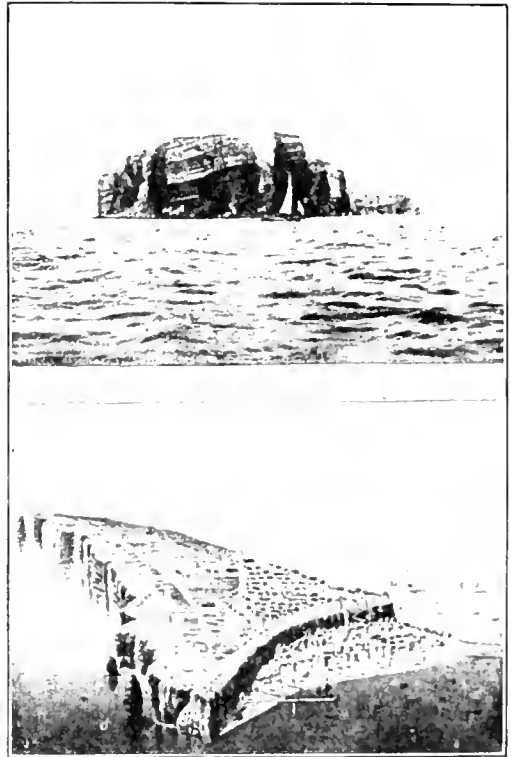
Moral effect is an important factor in war, and, although the military situation was not changed by the battle of Jutland, there is no question of the fact that the German public was elated by the statement from Berlin that the British Fleet had been withdrawn from the field of battle. This maneuver, however, was because of night-fall and was toward the German base of Heligoland, not toward British home bases. This should be convincing rebuttal to Germany's claim that her fleet gained a victory.

Those who support Admiral Jellicoe in his decision not to close the enemy Battle Fleet, maintain that, inasmuch as naval superiority was essential to the Allied cause, it should not have been risked upon such a hazard as would have been involved under the conditions which have been described, either by a precipitous closing at 6:14, or by pressing the retiring enemy during the afternoon and night, or by intercepting the High Sea Fleet the next morning at his selected position on the Horn Reef route. On the other hand, many hold the opinion that the destruction of the German Fleet was of such urgent importance as to justify this risk. It is too soon to seek a final solution of so intricate a problem.

Different theories have been advanced as to the probable causes of the loss of the three British battle cruisers. It is reported that the ships suffered heavy explosions which appeared to come up through turret tops. This has led to the opinion that enemy shells exploded in the respective turrets, and, igniting chains of powder to the magazines, caused the blowing up of the magazines. This is not at all unlikely, and directs attention to the need of safety precautions in the supply of

ammunition to turret guns. Another opinion is that insufficient protection, coupled with the superior type of German shell, resulted in penetration to the magazines.

In this connection the following lessons of experience drawn by Admiral Jellicoe are significant:



Two Views of Heligoland

This important island, used as a German naval base, was ceded by England to Germany in 1890, in exchange for the German rights in Zanzibar.

The African explorer Livingstone said that Great Britain had exchanged a trouser button for a suit of clothes. After the war broke out, the Kaiser is said to have remarked, "It can now be seen how the trouser button is holding our whole suit of clothes together."

(a) The urgent need for arrangements to prevent the flash of cordite charges, ignited by the explosion of a shell in a turret or in positions between the turret and the magazine, being communicated to the magazine itself. It was probable that the loss of one, if not two, of our battle cruisers was due to this cause, after the armor had been pierced.

(b) Better measures were required to prevent the charges of small guns from being ignited by bursting shell, and to localize any

fires due to this cause, in the case of guns of the secondary battery in large ships, and the main armament in small ships.

(c) Increased deck armor protection in large ships had been shown to be desirable in order that shell or fragments of shell might not reach the magazines. This need was particularly felt in all our earlier ships of the dreadnought type, since their side armor was not carried to the upper deck level. The long

range at which most modern sea actions are fought, and the consequent large angle of descent of the projectiles, made our ships very vulnerable in this respect.

(d) The pressing need for a better armor-piercing projectile with an improved fuse was also revealed.

(e) Improved arrangements for flooding magazines and drenching exposed cartridges had to be made.

NAVAL ACTIVITIES AFTER JUTLAND

German Naval Pressure on Russia in the Baltic—Lord Fisher Asserts that the British Navy Won the War

AS has been said, the great battle in the North Sea apparently did not change the naval situation. Things went on much as before. Aside from submarine sinkings, laconic Admiralty reports of occasional clashes, a cruiser torpedoed here, a raider sunk there, constituted about all the public heard of the silent navies. Still they were continuously at work carrying out the numerous details incident to blockading, patrolling, convoying, commerce destroying, submarine fighting, mine-laying and mine-sweeping.

In the fighting on the fringes of the Fleet the Allied navies suffered some losses, but this is not surprising. In executing North Sea raids the German Navy had certain tactical advantages. Protected by the guns of Heligoland, secure behind a network of mine fields and submarines, the enemy planned his excursion. There, in tranquil safety, he made careful preparation, and picked an opportune moment when weather and other conditions were best suited to his purpose. He then sallied forth and delivered a concentrated surprise attack. On the other hand the British Navy had no way of foreseeing the time and place of the attack, but had to rely on routine defensive measures maintained continuously, year in and year out, along the entire length of the exposed line. When one considers the advantages under which the German raids were planned and executed, it is surprising they did not attain greater success.

These raiding expeditions with attending light cruiser and destroyer engagements, together with submarine encounters, and such exploits as the brilliant attack on Zeebrugge (see a later chapter in this volume) and the torpedoing in Trieste harbor of the Austrian battleships *Monarch* and *Wien* by two small Italian steamers are interesting enough in themselves and by no means inconsequential, but they will not be discussed here as the scope of these chapters is limited to the major operations of the war.

The German advance in the Baltic Sea against the Russian defenses guarding the Gulf of Riga would properly be included in the latter, and, although by reason of the Russian collapse this advance took the form of a strategical maneuver without noteworthy fighting, brief mention of it should be made before turning to a general survey of the rise and decline of submarine frightfulness.

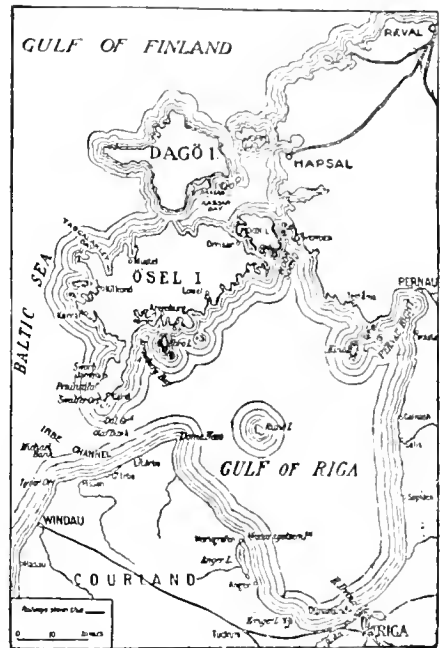
RIGA GULF OPERATIONS

German armies occupied Riga early in September, 1917. This Russian seaport is situated on a large land-locked gulf, three-fourths of which is enclosed by the mainland. The opening into the Baltic is about seventy miles wide, but is almost completely filled by the large island of Oesel, in area about equal to Rhode Island. Projecting from the south side of Oesel Island is the

Sworb peninsula, between which and the mainland is Irbe Channel, about twenty miles in width, the chief entrance to the Gulf of Riga. Moon Sound, the northern waterway into Riga Gulf, is blocked by Moon Island, situated like a stepping stone from Oesel to the mainland. Dagoe Island is another large island north of Oesel and Moon, separating them from the Gulf of Finland. Moon Sound divides the mainland from Oesel and Moon, and thence continues northward past Dagoe Island into the Gulf of Finland. Soela Sound leads from the Baltic to the eastward into Moon Sound and separates Dagoe Island from Oesel. Reval, the Russian naval base and port of Petrograd, is about ninety miles further up the coast to the northeastward. Mutiny in the Russian Navy weakened the defense of this region.

The German combined naval and military expedition sent to capture the island guarding the Gulf of Riga is reported to have comprised one battle cruiser, eight battleships, twelve light cruisers, forty torpedo boats, thirty mine-sweepers, attending submarines, aircraft, gun-boats, and motor boats, with a convoy of transports carrying the army landing forces.

This was not the first attack made by Germany against the outpost defenses of Riga. As early as August, 1915, a German naval expedition tried to force an entrance into the Gulf, but was obliged to abandon its purpose. In 1916 the Russian naval and coast defense forces were reported to be strong and well equipped. In May of that year the Russian Fleet coöperated with the Army in bombarding the left wing of the German lines. There was evidence that Sworb peninsula had been well fortified, that batteries of heavy guns had been erected on Oesel and Dagoe Islands, that lighter shore batteries had been mounted along the shores to repel landing parties, and that the water approaches had been made dangerous for hostile ships by mines and by shore torpedo stations. In addition to the above coast defenses, Russia possessed aircraft, submarines and a mobile fleet. In 1916 to capture the sea approaches to Riga would have been a formidable undertaking; but by October, 1917, intrigue and anarchy had worked havoc with Russia's armed forces, and the German occupation of



Map of the Gulf of Riga

the islands was easily accomplished apparently without serious opposition.

At daylight on October 12th shore batteries on the Baltic side of Oesel Island were bombarded by German battleships and quickly silenced. At several points troops were landed; and the occupation of the island began. In the meanwhile German cruisers and destroyers, preceded by mine sweepers, worked their way around the island. After the batteries on the south side of Dagoe Island had been overcome by heavy gun-fire from the fleet, the light craft penetrated the narrow waters of Soela Sound and entered Moon Sound. The Russian Fleet of about twenty ships offered some resistance to the advance, but gradually withdrew before the gun-fire of the enemy fleet. By October 17th the Sworb peninsula in the south had succumbed to land and sea attacks and all of Oesel Island had been occupied. By October 18th Moon Island also had been seized. This gave to Germany control of the island bordering the Gulf with free ingress to and egress from the port of Riga.

The German expedition seems to have been carefully planned and well executed. On the other hand, Russia does not appear to have

offered much organized resistance. The Germans made the voyage to the scene of operations without molestation and although fighting occurred during the occupation, the defense seems to have been for the most part haphazard and ineffectual. Under the circumstances no tactical conclusions can be drawn. According to Petrograd reports, the battleship *Slava* and the destroyer *Grom* were lost by Russia, while German losses amounted to six torpedo boats sunk and others damaged. Germany made no report of having lost any ships and it may be inferred that neither her sea force nor her land force suffered much damage.

Strategically the position of Germany in the Baltic was greatly improved. Sea communication with Riga had been opened for the transport of troops and supplies, while a dominating advanced base had been established for further operations against the Gulf of Finland, Reval, and Petrograd.

HOW GERMAN SEA POWER CRIPPLED RUSSIA

This defeat at Riga was not the only way in which Russia was made to feel the weight of German naval power. With Turkey's

entrance in the war German control of the approaches to Constantinople closed Russia's Black Sea ports. In like manner German control in Baltic waters had, from the beginning of the war, cut off direct sea communication with Russia's western ports on the Gulf of Riga and the Gulf of Finland. Just as Germany suffered under the pressure of Allied sea power, so did Russia feel the pressure of German sea power. It would be hard to overestimate the importance of this factor in the downfall of our Eastern ally. To be sure Russia's Arctic ports and her Pacific ports remained free, but ice hampered the former while the lines of communication to the latter were long and inadequate. As a result Russia's armies could not obtain the munitions and equipment they needed from the Allies nor could the latter get the grain which Russia then had to give them in exchange. Political effects are less tangible, but it can readily be appreciated how this cutting off of Russia from her allies helped German intrigue.

It is well to emphasize this neglected aspect of the war because of the more or less prevalent erroneous opinion that the German Navy had no important function in the enemy war plan. This mistaken view has been



© Underwood and Underwood.

American Sailors in the Victory Parade in New York



THE WATCHERS OF THE SEAS.

THE NAVY NEEDS BOYS AND MEN FROM
15 TO 40 YEARS OF AGE.

A British Naval Poster

Illustrating the work of the North Sea Patrol.

largely due to a doctrine assiduously preached in England to the effect that the British Navy exercised full and unquestioned command of the seas practically from the first day of the war; that had Germany never built a dreadnought or if all the German dreadnoughts had been sunk, the control and authority of the

British Navy could not have been more effective; and consequently, that there was no reason for the Grand Fleet to seek a sea battle, because without it the Allies were enjoying all the benefits that could have been obtained by a decisive victory.

A little reflection, however, reveals the

fallacy of this doctrine. With equal plausibility it might be argued that the German High Sea Fleet accomplished the object for which it had been built, and the defeat of the enemy war plan was due not to any failure or inadequacy of the German Sea Forces, but to the failure of the German Armies in their attempt to crush France. It must, indeed, be admitted that the German Navy accomplished an important mission by holding in readiness a fleet "in being" of such power that the British Grand Fleet hesitated to seek an action under the conditions of advantage which this High Sea Fleet was in a position to compel by restricting its operations to the vicinity of home bases. This prevented a close blockade and kept open German sea communications with the northern neutrals and cut off Russia from Allied support via the Baltic. If the German fleet had failed in this mission, or if it had been destroyed at Jutland, it is not unreasonable to suppose that the Allies would have instituted a close blockade and in all probability would have been able to obtain, without the aid of the United States, a much earlier victorious peace.

THE SUBMARINE

After the battle of Jutland naval strategy was not marked by any major contact of fighting forces. The Allied objective was to make sea pressure on the Central Powers more effective, while the enemy countered with a submarine campaign against commerce the like of which the world has never seen for fury and virulence. From now on the war at sea centered on the submarine.

It is not likely that in building up the German Navy even von Tirpitz himself ever visualized the under-water campaign against peaceful shipping which the necessity of war finally influenced the German government to inaugurate. Before Jutland, however, the capabilities of the submarine against trade ships had been tested, and although by that date only about two and one-half million tons of shipping had been sunk in 18 months, a rate of loss which, if not exceeded, would have given the Allies no great concern, still there was every indication that it could be exceeded and German naval strategists felt that the possibilities of this form of attack had

been demonstrated. It was a diabolical scheme, but they reasoned correctly in concluding that to strike at the Allied sea communications with unlimited submarine warfare would, if successful to the degree which they believed practicable, sap the strength of France and England, render nugatory intervention from the Western Continent and thus make possible the decisive triumph of the German Armies.

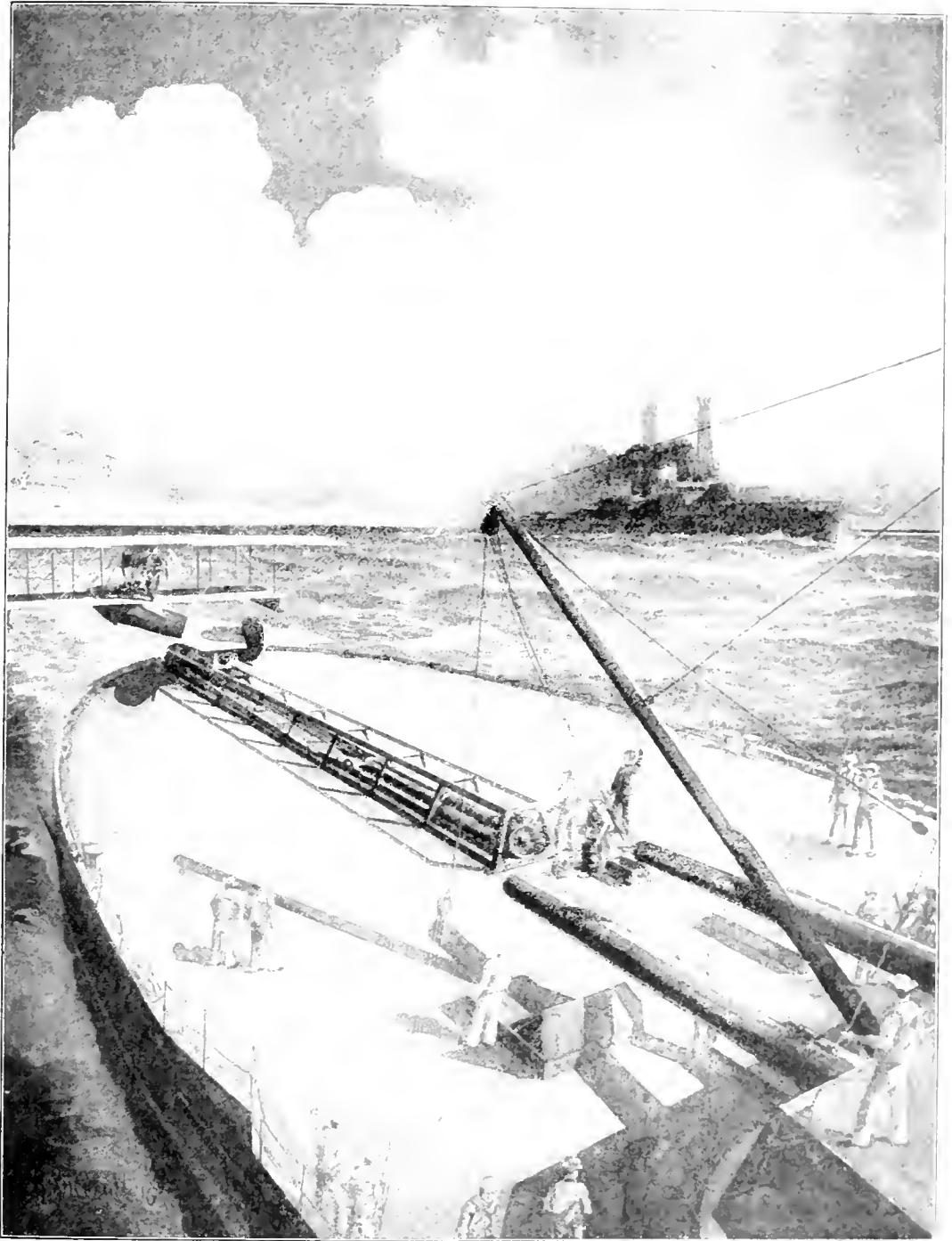
This counsel prevailed, and brought misfortune instead of success, as is now well known. Hindsight, however, is better than foresight, and the U-boat came perilously near to gaining its objective. Here again it is to be borne in mind that it was the High Sea Fleet that made possible the German submarine campaign. Had this fleet been destroyed at Jutland, the establishment of a submarine base at Zeebrugge could hardly have been effected, and the close investment of Heligoland with Allied mine fields would have made the going and coming of submarines extremely hazardous if not impossible.

LORD FISHER ON NAVAL CONCENTRATION

All nations acknowledged the American Admiral Mahan as the foremost strategist of modern times. In season and out, he urged the importance of observing the principle of concentration, in peace as well as in war. Just before the war Mahan wrote an article in the *Scientific American* saying, "the world had suddenly discovered that 88 per cent of the guns of the British Navy were trained on Germany." The North Sea, or, as the German Emperor likes to call it, the "German Ocean," had become the regular cruising grounds of the concentrated British Battle Fleet.

In this there is a striking lesson which has been pointed out by the British Naval authority, Lord Fisher, in his after-the-war writings. In these he recalls aptly Napoleon's saying, "Your battle ground should be your drill ground," and states that by the timely concentration of the British Navy in the North Sea, "the war was won and won on August 4, 1914, the day war was declared."

In spite of this, Lord Fisher does not think that full advantage was taken of the naval



A Catapult for Launching Airplanes

For the launching of airplanes from the deck of a battleship, a catapult of the type here shown was used at first. However, toward the closing days of the war, smaller planes were used which rose from the tops of the turrets.

situation, so overwhelmingly in favor of the Allies at that time. In the below quoted passages, he criticizes the strategy which sent British troops to the Western front and says that the principle was wrong, in that it resulted in assigning Naval strategy a subsidiary defensive rôle, whereas, British Grand Strategy should have assigned the Naval forces the primary offensive mission.

"On Dec. 3, 1908, when I was first sea lord of the Admiralty, I gave my opinion that if ever we landed the British Army on the continent in the war against Germany then would come the biggest blow to England she would ever have experienced. Not defeat, because England never succumbs, but by a deadly blow to our economic resources and by inevitable relegation of the British Navy into subsidiary service, as it was actually so called by Sir Iver Phillips, M.P., in the House of Commons. I also said the above to King Edward in 1908. I think Lord Esher heard me say it to King Edward that in the last phase will be found these words of Bonaparte at St. Helena: 'At present the English can dictate to the world, more especially if they withdraw their troops from the continent and remain purely a maritime power. She can then do what she likes.'

"In July, 1899, I walked the sands of Scheveningen with General Gross von Schwarzkopf. The German Emperor said he (Schwarzkopf) was greater than Koltze. He was the military German delegate at The Hague conference. He was designated as chief of the general staff at Berlin, but he was burned to death in China instead.

"I had done him a very good turn, so he opened his heart to me. There was no German Navy then. We were doing Fashoda, and he expatiated on the rôle of the British Army, how the absolute supremacy of the British Navy gave it such inordinate power, far beyond its numerical strength. Because, 300,000 men could be embarked in transports and God only knowing where they might be put ashore, it was a weapon capable of deadly blows, occupying perhaps Antwerp, Flushing on the Continent, or landing ninety miles from Berlin on that fourteen miles of sandy Pomeranian beach, impossible of defense against a battle fleet sweeping with devastating shells the flat country for miles, like a mower's scythe. No fortifications were able to withstand projectiles of 1450 pounds.

"It was a precisely similar operation and precisely as simple and easy as the Russian Army landing on the coast of Pomerania in the time

of Frederick the Great and as Admiral von Scheer has recently reminded us we could have done the same, and to use his words, 'easily marched to Berlin.'

"The original English expeditionary force of some 160,000 men in all was but a drop in the ocean compared with the German and French millions upon millions of soldiers, but if it was going to be sent to the continent then that British force of 160,000 men landed by the British Fleet at Antwerp and sustained at Antwerp by the British Fleet would have been an impregnable barrier to the German advance, if combined with the seizure of the Baltic by the British Fleet, so overwhelmingly superior at the outbreak of the war to the German Fleet, and the landing of Russian armies on the Pomeranian coast within ninety miles of Berlin.

"Well, why did not the German Fleet, commanded by the most pugnacious of all German Admirals, mask the British Fleet at Scapa Flow, whilst a multitude of German transports conveyed German armies unattacked to Cherbourg, just as the German armies afterward, to the lasting disgrace of the British Navy, were conveyed to Riga and the vicinity of St. Petersburg without fear and without loss? Well, the reason was that the British Fleet was superior to the German Fleet and the Germans knew it. That fleet won the war because it stopped the German Fleet in its first moments from the possible annihilation of France. That fleet saved our commerce; that fleet sent Admiral von Spee to the bottom and all of his eleven fast ships; that fleet established a cordon that hemmed in the Germans, and that fleet was capable of landing the Russian Army on the coast of Pomerania as Admiral von Scheer feared it would do, whence, as he says, they could have marched to Berlin."

ARMISTICE TERMS FOR GERMAN NAVY

The Naval condition of the armistice concluded November 11, 1918, provided first, that all submarines be surrendered; second, that certain designated surface warships be disarmed and interned, and third, that all other surface warships be disarmed and placed under the supervision of the Allies and United States of America. These conditions are set forth in the following quoted paragraphs from the armistice:

"To surrender at the ports specified by the Allies and the United States all submarines at present in existence (including all submarine

cruisers and mine-layers), with armament and equipment complete. Those that cannot put to sea shall be deprived of armament and equipment, and shall remain under the supervision of the Allies and the United States. Submarines ready to put to sea shall be prepared to leave German ports immediately on receipt of wireless order to sail to the port of surrender, the remainder to follow as early as possible. The conditions of this Article shall be completed within fourteen days of the signing of the armistice.

"The following German surface warships, which shall be designated by the Allies and the United States of America, shall forthwith be disarmed and thereafter interned in neutral ports, or, failing them, Allied ports, to be designated by the Allies and the United States of America, and placed under the surveillance of the Allies and the United States of America, only care and maintenance parties being left on board, namely:—

6 battle-cruisers.

10 battleships.

8 light cruisers, including two mine-layers.

50 destroyers of the most modern type.

"All other surface warships (including river craft) are to be concentrated in German naval bases, to be designated by the Allies and the United States of America, completely disarmed and placed under the supervision of the Allies and the United States of America. All vessels of the Auxiliary Fleet are to be disarmed. All vessels specified for internment shall be ready to leave German ports seven days after the signing of the armistice. Directions for the voyage shall be given by wireless."

INTERNMENT OF GERMAN FLEET

Seventy ships of the German Navy—five battle-cruisers, nine battleships, seven light cruisers, and forty-nine destroyers—were interned on November 21st at Rosyth. One battleship, one battle-cruiser, one light cruiser were short of the numbers named in the armistice terms. The number of capital ships interned was brought up to sixteen by the inclusion of eleven battleships and five battle-cruisers. On the 22nd the enemy ships set out under a strong escort for Scapa Flow, where they were to remain until the Peace Treaty decided their fate.

At 11:00 a.m. on the 21st Admiral Beatty made a signal by wireless to the German Admiral:—"The German flag will be hauled

down at sunset to-day (Thurs-day), and will not be hoisted again without permission." This order was complied with by the Germans, but on the following day Rear-Admiral von Reuter from the *Friedrich der Grosse* issued a protest to Admiral Beatty:—

"You ordered by wireless of November 21st that the German flag, after being hauled down at sunset, was not to be hoisted again without special permission. On November 21st I urgently requested the Chief of the Staff of Admiral Madden that this order should be canceled, as the German ships have flown their flags honorably. I have not yet received an answer.

"According to the terms of the armistice, the ships were to be interned in neutral harbors or in harbors of the Allies. As far as I know, during internment in neutral harbors during this war and former wars flags have always remained hoisted. Had I been interned in a neutral harbor this would have been the case. Neutral harbors and harbors of the Allies are absolutely parallel, according to the literal conditions of the armistice and to the sense of the conditions of internment.

"Therefore, I esteem it unjustifiable and contradictory to international custom to order the striking of the war flags in the German ships. In addition, I am of opinion that the order to strike the flag is not in keeping with the idea of chivalry between honorable opponents. I therefore now enter an emphatic protest against this order."

The Commander-in-Chief of the Grand Fleet made the following reply:—

"Your protest against my order regarding the flying of German colors is noted. I would draw your attention to the fact that an armistice suspends hostilities and that a state of war still exists between Germany and the Allies. Under the circumstances no enemy vessel can be permitted to fly the national ensign in British ports while under custody."

SURRENDER OF ENEMY SUBMARINES

On November 20th twenty German submarines came to surrender to the British squadrons and flotillas under the command of Rear-Admiral Sir Reginald Tyrwhitt off the Suffolk Coast. The submarines were accompanied by two German transports, the *Tibania* and *Sierra Lentana*, which were to take the submarine crews back to Germany.

All the crews of the British ships were at their quarters, and with the U-boats in charge proceeded towards Harwich. About 20 miles off the port the ships anchored and British crews were put on board the German vessels to take them into harbor. As the boats went through the gates the White Ensign was

hoisted over each German flag. On November 21st nineteen of the submarines, one having broken down on the way, surrendered to the British naval forces. On November 22nd twenty more submarines were surrendered, and on November 25th a further twenty-eight U-boats arrived.

WHY JUTLAND BATTLE WAS INDECISIVE

Did Jellicoe Miss a Great Chance When He Failed to Support Beatty's Attempt to Bring the Enemy to Close Action?

BY ARTHUR POLLEN,
The Foremost British Naval Critic

THAT the battle of Jutland was an event altogether unique is a truth, often insisted on, that bears repetition. It is indeed singular in aspects almost too numerous to set down. A few of them may be usefully borne in mind. It was the only fleet action of the Great War. It was the first and, therefore, the only fleet action between battle units incorporating all the resounding changes and developments that came about during the "Fisher" era. Lord Fisher became First Sea Lord in the autumn of 1904, and before he vacated that office at Christmas, 1909, the material elements of the chief fighting units had been changed out of all recognition. Further, that new fighting elements, of quite untested possibilities, had either already come into being, or were on the eve of it, was certain. The all big-gun ship, the battle cruiser that could take twice the armament of any battleship of the pre-dreadnought type into action at very nearly twice the speed—these two developments alone promised something novel and striking in the way of tactics. But in the same period improvements in the methods of gunnery had lengthened the anticipated range in action from four to over fourteen thousand yards. Tactics, then, would be varied, not only by the speed and power of the units engaged, but by the distance apart at which they would engage.

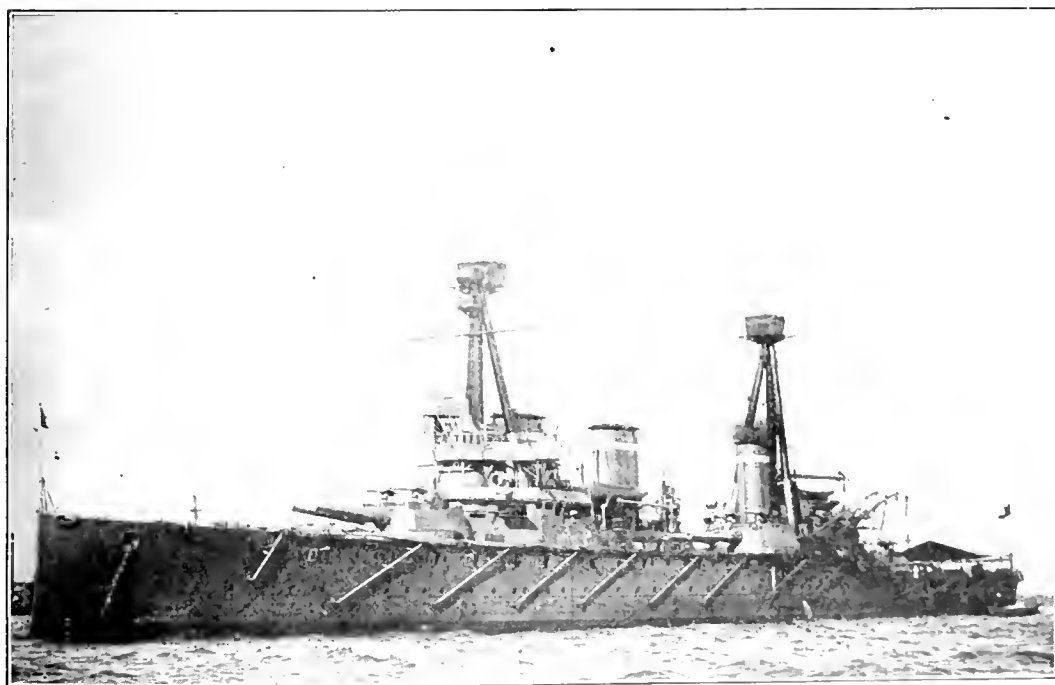
In the employment of these new ship units,

new weapons and new aids to tactics, the battle of Jutland not only broke new ground, but stood out as an event in war to which there is no historical parallel at all. If we leave *matériel* and technique on one side and look at it in the light of broad strategic principle, we find again certain aspects to which it is difficult to find any exact or even approximate precedent. Has it ever happened before that a sea encounter between—I will not say the main forces of two naval powers, but virtually their entire battle forces, has occurred, and that the encounter should have been a complete surprise to both? Again and again it has happened in the past that the weaker of two sea forces has kept its ports, or otherwise avoided action, for months and even years, and then in the end come out to battle. But it has come out because the pressure exerted, by the unembarrassed and more powerful sea force, has created a position so intolerable that even a naval defeat was preferable to submission. But there was nothing in the naval position of 1916 to force the German Fleet to that decisive kind of action to which Villeneuve in 1805, Cervera in the Spanish-American War, and Rodjesvinsky a decade later, had been compelled. The only parallel of these actions in the recent war is to be found in Cradock's seeking action with von Spee at Coronel. On May 31, 1916, neither von Hipper nor Scheer were

out for any general engagement at all; still less were they out for a decision. It is quite true that there were very strong reasons why the German Higher Command should attempt to reestablish the country's naval prestige. The long delayed blockade had told heavily on the comforts, and was beginning to tell disastrously on the *morale* of the German people. The weapon on which von Tirpitz had relied as a counter stroke—the submarine used recklessly against the undefended sea communications of the Allies—had in fact effected very little in the first fifteen months of its employment, and that little had just been brought to nothing by the protest to which the American Congress had been moved by the outrage on the cross Channel steamer *Sussex*. Clearly, in such a situation something which could be represented as a successful, or at any rate as a real, demonstration of real naval strength would have an invaluable, if only a temporary, effect in raising the general spirits. And it was to seek a sort of raiding success, but only to seek this, that

the German Fleets came out. Now this, of course, is not only a different thing altogether from such naval encounters as were Trafalgar, Santiago, or Tsushima. It is, indeed, their exact opposite. In these cases the inferior fleets had been forced out, and came out to fight. This fact governed their conduct when the encounter came. The German Fleet was not out because defeat was preferable to encounter; it was out because action of some kind was desirable. But anything—even flight—was better than defeat. For defeat would have ended all German hopes at a blow. The submarine war was, after all, the only hope of defeating Great Britain. And the High Seas Fleet was the only protection the German submarine could have. Scheer and von Hipper, therefore, were once more out on a tip and run game. I imagine, then, that in this respect, too, Jutland stands unique in history.

It is also the only sea fight of which I know in which the Commander-in-Chief of one of the fleets on one side has published, as far



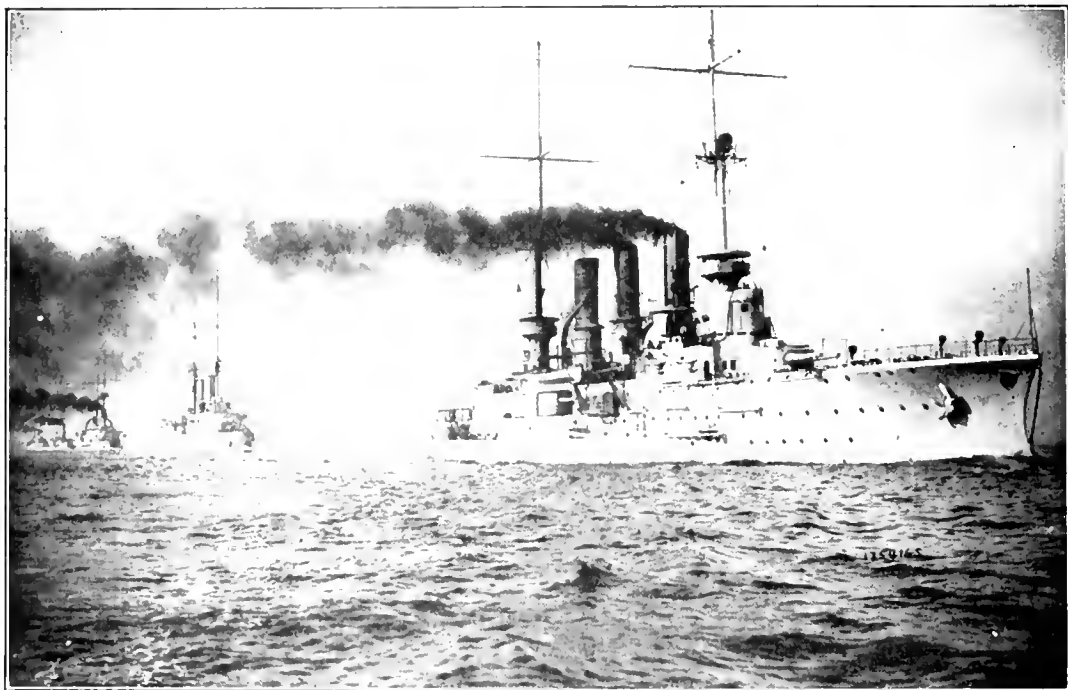
by London and London ed.

British Battle Cruiser *Invincible*

She was sunk by German gun fire in the Battle of Jutland. She was the flagship of Admiral Hood, who was killed while on the bridge.

as was in his power, a candid and complete account of his actions, and motives for action, throughout the day. Now if we must be careful to free our minds of such disturbing obsessions as the novel size, speed, and power, of the battle units on this strange occasion, still more must we be on our guard against the hold which this unique example of naval apologetics almost necessarily forces on our judgment. Students of war and, if the distinction is possible, still more students

not even suggest an explanation of the actions and motives of others. It is one of its great merits that it does not do so. But this reticence has a consequence. The majority of readers take the share of the other admirals to have been something more or less automatic or inevitable. Concentration on the arguments and considerations that determined the decisions of the Commander-in-Chief of the greater force results, to a great extent, in a complete ignoring of the fact that arguments



© Underwood and Underwood.

Five of Germany's Fleet of Battle Cruisers Out for an Endurance Test

of the psychology of those that make war, have profound lessons to learn from the study of this fascinating volume. I do not propose to discuss these lessons here, nor to evaluate the author's admissions as contributions to the final judgment that will be passed upon the events we are discussing. I confine myself to drawing attention to one effect of the book, to which, so far as I know, attention has not yet been directed.

BEATTY'S STORY REMAINS UNTOLD

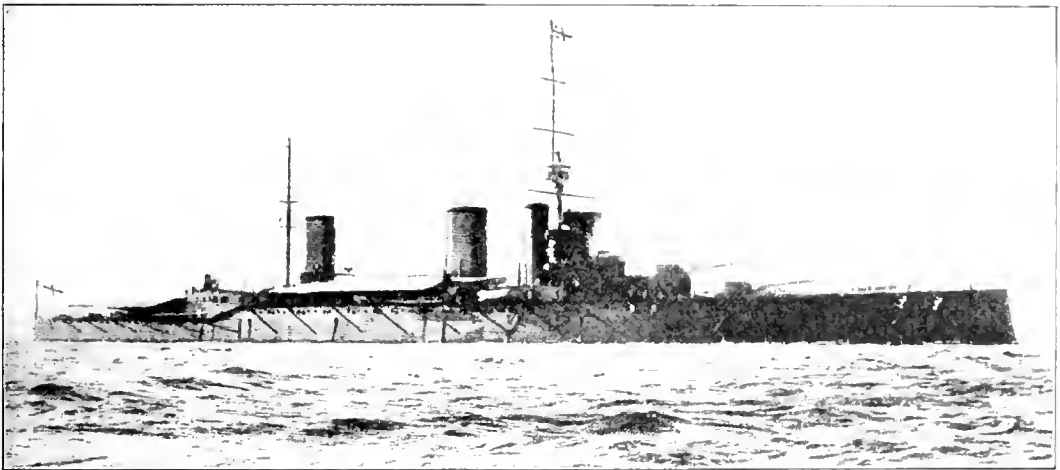
It is this. Lord Jellicoe's story, while very full in accounting for his own actions, does

and considerations of a still graver character must have been present again and again in the mind of his great subordinate. And, unfortunately for us, the officer who led the battle cruisers into action has been almost entirely silent as to his own share in the action. Except the dispatch published a month after the action was fought, no word about the battle of Jutland has escaped Sir David Beatty. And this dispatch, for obvious reasons, could neither be complete nor candid. If, then, we are to attempt any real understanding of an action in which the parts played by the Battle and Battle Cruiser

Fleets was not only quite distinct, but in very startling contrast, we must have before our minds a statement, or at any rate a suggestion, of the motives and considerations that governed the leadership of the battle cruisers at various crises of the action. And this, if we are to have it at all, we must get, not from any autobiographical statement of the leader's aims, but from an analysis of each successive situation, and by discerning in face of the several factors composing it, the true character of the action taken.

To attempt this in the case of all the turning points in the battle of Jutland would be

enemy, to penetrate his cruiser screen, to embarrass his retreat if he tries to fly, to shepherd, to cajole, or to force, him into action with the main body, if circumstances permit. In the discharge of this task it would sometimes be its duty to fight, and to fight even at some risk. It might have to engage and, if possible, destroy the scouting forces of the other side. But not because such action would be decisive of sea power, but because it would facilitate the destruction of the enemy's main force by the Battle Fleet, wherein alone, of course, a final decision could be found. And these considerations would



The Battle Cruiser *Lion*

The flagship of Sir David Beatty in the Battle of Jutland.

beyond the scope of the present contribution. I propose, therefore, to leave aside the opening phases of the action, the long encounter with von Hipper in which *Indefatigable* and *Queen Mary* were lost, the hour during which the battle cruisers and the Fifth Battle Squadron fell back on the Grand Fleet after the German forces united, and begin my analysis with the situation at six o'clock, when the main British forces first came into touch with each other.

In studying these phases, however, it is necessary to bear two things quite clearly in mind. The mission or function of a Battle Cruiser Fleet changes in character according to circumstances. Its general strategical function is to act as a scouting force on behalf of the main squadrons. It has to find the

govern its actions throughout the period during which it acted as a scouting force only. But if that scouting achieved its end, if in point of fact the enemy's main body was somehow persuaded or maneuvered into contact with the Grand Fleet, then the battle cruisers would themselves become part of the Grand Fleet and, as such, take their direct share in seeking the great decision. Their duty then would be to create such a situation for the enemy that the Grand Fleet's task, viz., the enemy's complete destruction, should be facilitated in every way; and it to do this their fullest fighting resources must be thrown in, then clearly no consideration of loss of ships or men should weigh against the achievement which is, after all, the sole purpose for which a fighting fleet exists.

These elementary truths will help those who study this action to understand why it was that between a quarter to four and a quarter to five, Sir David Beatty did not continuously press action against von Hipper to the most decisive possible point; why, between a quarter to five and six, when he had the whole German Fleet against his eight ships, though he kept a fighting contact with the enemy, he attempted no maneuver of a drastically aggressive character. For the enemy was doing, apparently of his own volition, exactly what was Sir David Beatty's duty to make him do if possible. That is to say, he was heading directly for the Grand Fleet. They will further suggest why, after 6 p. m., Sir David acted in so very different a manner.

THE SITUATION AT 6 P. M.*

With these points clear it is possible to appreciate the main features of the two

* The author's discussion of the various movements of the fleets will be clearly understood by reference to the diagrams accompanying the account of the Jutland battle, pp. 69-128.

periods with which I propose to deal in some detail. The first extends from 6 p. m. to 6:50 p. m. The second is the period from 7:10 p. m. till 7:23 p. m. At six o'clock, as shown by the diagrams in the preceding article, the situation was as appears in Diagram No. 11, page 116. What had happened was this. The Grand Fleet had since 4 p. m. been following the course and in the formation shown in the diagram. Sir David Beatty, with four battle cruisers and followed by four battleships, had been keeping well ahead of the German Fleet, and at a range of about 14,000 yards from their van. At six o'clock he saw the right hand division of the Grand Fleet, and at once changed course so as to place his four fast ships at their head. This necessitated his closing on to the head of the German line. The Germans seem to have perceived this movement, whereupon their battle cruisers, which were two or three miles ahead of the Battle Fleet, described a circle round to the right, so as to give the Battle Fleet time to form up directly astern of it. Von Hipper, in other words, fell back upon Ad-



Underwood and Underwood.

The British Battle Cruiser *Indefatigable*

Sunk by the Germans in the Battle of Jutland.



Photo by Hunter.

King George and Admiral Beatty

The head of the British Empire and the sailor on whom the safety of that Empire chiefly depended. When it comes to fighting, in small things and in great, Beatty has an instinct for the right stroke at the right moment, which in war is beyond price.

miral Scheer, so as to deal with the new situation as a combined and compact force. While this maneuver was going on, Sir David Beatty was speeding forward and the Grand Fleet, after a brief change of course, continued as before. Lord Jellicoe did not deploy into line earlier, because while informed of the position of the German battle cruisers, he was not informed of the exact position of the German Battle Fleet.*

Many elements of unexpectedness undoubtedly complicated the situation, and Lord Jellicoe postponed deployment from 6 p. m., when the battle cruisers were first seen, till 6:14, when the right hand division of the Battle Fleet was in action directly astern of Sir David Beatty's cruisers. At this moment Lord Jellicoe could think of no way of deploying except by making the extreme left of his line a pivot to which the five divisions disposed abeam were ordered to turn. As each ship arrived at the pivot it turned a right angle into the wake of the ship ahead; the left hand division kept its course.

BEATTY'S TWO ALTERNATIVES

Now at 6:14 p. m. the four ships in the extreme right hand division were in action supporting the battle cruisers. The deployment order took them out of action and left the battle cruisers unsupported. The German line meantime was pressing on. What was Sir David Beatty to do? He had a choice of two alternatives. He could hold a course parallel to the enemy and push on at full speed keeping the enemy's van in action, or he could turn away and take station at the head of the Grand Fleet, a maneuver that he had ample time to execute. For the deployment had dropped the speed of the Grand Fleet from twenty knots to less than fourteen, and, with a ten knots' advantage, the execution of the maneuver would have been simple. But he elected to remain in action and held to a line parallel to the enemy's.

* It must be borne in mind that this was not the only failure of the intelligence system. From messages previously received Lord Jellicoe was led to expect that he would meet the battle cruisers and the enemy at a point at least 12 miles from that at which the encounter actually took place. It seems a curious comment on the supposed development of scientific navigation and methods of communication, that, at so critical a moment as this, it was impossible for the British Commander-in-Chief to have had more accurate and more recent information.

The fact is he carried on the fight single-handed.

BEATTY PRESSES THE ATTACK

Six or seven minutes later Admiral Hood, with three battle cruisers, came into view. He was attached to the Grand Fleet and had been seeking for the Battle Cruiser Fleet and the enemy at the more easterly point at which the meeting had been expected. This search having failed, he had fallen back on the sound of firing, and his opportune appearance gave to Sir David Beatty exactly the reinforcement without which he would not have been justified in his next maneuver. Hood was at once ordered to take station ahead of *Lion*; and the Battle Cruiser Fleet, now seven strong instead of four, closed sharply on the German van, bringing down the range to less than 8,000 yards. *Invincible* was struck in one of her center turrets and blew up almost immediately. This, however, did not check the execution of the maneuver. *Inflexible* and *Indomitable* turned still closer to the enemy, and the attack was pressed until *Lützow* was virtually destroyed, and the whole van of the German line thrown into such confusion, that an immediate turn to the south was made, a turn afterwards continued to the southwest. At 6:50 p. m. when this result had been brought about, Sir David Beatty ordered *Inflexible* and *Indomitable* to fall in astern of his own squadron, and dropped speed from 24 to 18 knots and waited for the Grand Fleet. (Diagram, page 123.)

JELICOE SLOW IN COMING INTO LINE

Now at the time when this cruiser attack culminated—say at 6:35 p. m. when *Invincible* blew up—the deployment of the Grand Fleet was still not complete. The rear ships still had to turn to bring them into line with the *King George the Fifth*. This vessel, at the head of the three Grand Fleet divisions, had been following a course roughly parallel to that of the battle cruisers, but along a line nearly half as far again from the Germans as that which Sir David Beatty had followed. As the light and seeing conditions were bad, the Grand Fleet had little opportunity of using its guns with effect; and any

faint chances there may have been were for the most part spoiled by the enemy's employment of smoke screens. Until 6:50 p. m., then, the German Fleet was virtually not engaged at all by the British main forces, and the damage it had sustained, which was undoubtedly considerable, had been suffered at the van only, and at the hands of the battle cruisers, which were in very close action. But the battle cruiser action finished at 6:50 p. m., and, by this time, the Grand Fleet was

BEATTY PASSES AHEAD OF THE GERMANS

The Grand Fleet accordingly, at the Commander-in-Chief's orders, changed course from southeast to south by divisions. That is to say, each group of four ships turned on its leader so that the original cruising formation in six parallel lines was resumed, but with this difference, that the divisions were *en échelon*, from which falling into line on the new course was a single maneuver. It

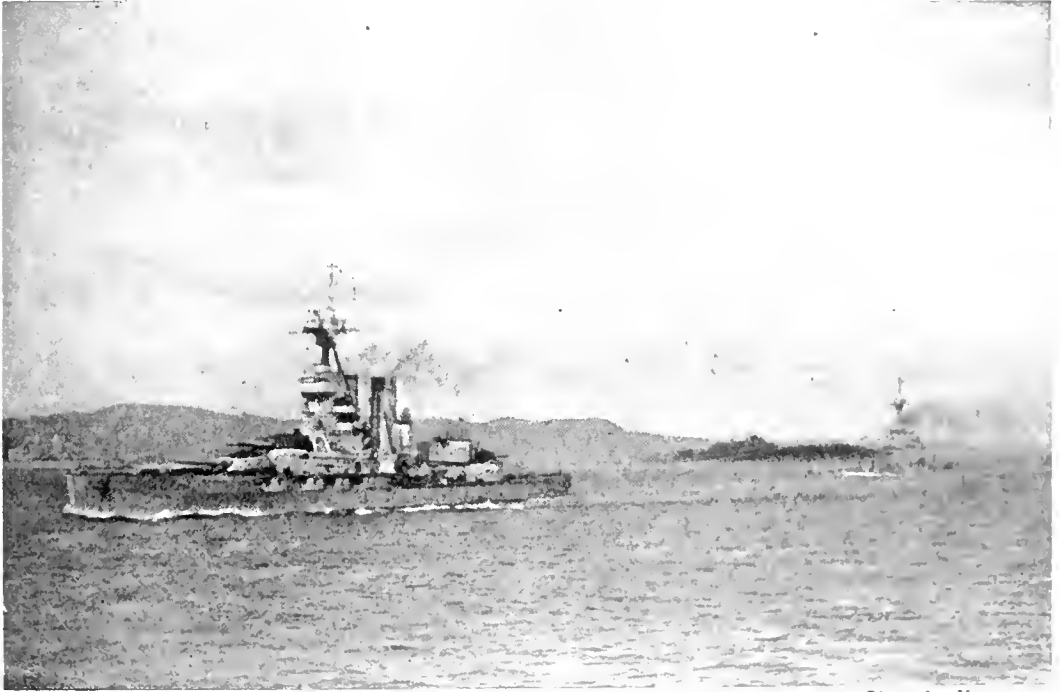


Photo by Hunter.

Stripped for Action

Official photograph of a line of British battle cruisers steaming out to search for the enemy.

not only in a continuous line, but had already outflanked the Germans considerably, for it was following a more or less southeasterly course, while the Germans were turning from south to south-southwest, and the turning point was abreast of about the tenth ship from the rear in the British line. So far, then, the deployment of the Grand Fleet had failed if its purpose was to bring the British Fleet into close and decisive action with the Germans, and it became necessary to give the fleet a new direction, in other words, to deploy a second time.

took approximately twenty minutes for the whole line to reform itself on the new southerly course. Sir David Beatty, on perceiving this movement—at 6:50 p. m., it may be remembered, the last of his squadron of six ships was about 3,000 yards from the leading ship of the Grand Fleet, so that the maneuver I have just described seemed to suggest that the main fleet would pass between him and the retreating Germans if he kept his position,—put on full speed and, taking advantage of it, passed ahead of the Grand Fleet shortly after 7 p. m.

DID BEATTY SIGNAL TO JELlicoe?

The reader has now to picture to himself the Grand Fleet in line ahead, roughly parallel to the German Fleet but behind it, with Sir David Beatty's squadron ahead and closing on the German van. Except that the German Fleet was on the bow instead of on the quarter of the British force, the situation at ten minutes past seven was virtually the situation that would have resulted at 6:15, had the Grand Fleet so deployed a quarter of an hour earlier as to be in battle formation immediately astern of Sir David Beatty. Such a disposition would have been ideal for obtaining a concentration on the van by the fast division, while the battle squadrons poured in their artillery on the center and rear. But at 7:10 p. m., when *Lion* leading the battle cruisers was hardly abreast of the center of the German line, a different maneuver was called for. If the Germans were to be brought to decisive action it was necessary for the six battle cruisers to be supported by at least two divisions of the Battle Fleet in a full speed effort, not necessarily to head the German line, but keep it in close action, and so to constrain its movements. It was apparently to bring about this maneuver that Sir David Beatty crossed ahead of the Grand Fleet at an angle of about 45° ; and it has been said that, as he did so, he suggested to the Commander-in-Chief by signal, that if the Second Battle Squadron would follow him the enemy could be annihilated. Lord Jellicoe does not refer to this signal at all in his book, so that we do not know if it reached him or not. However this may be, the Vice-Admiral's actions show his intentions very clearly, and it was of course obvious that their execution was only possible if he was substantially reinforced. Unfortunately, however, the attention of the Commander-in-Chief at this point was diverted. In consequence, during the 13 minutes between 7:10 p. m. and 7:23 p. m., the gap between the battle cruisers and the leading squadron of the Grand Fleet increased. But the angle between Sir David Beatty's course and the Germans did not decrease. In other words he did not feel justified in once more closing to a short range engagement without support from Sir Martin Jerram and his squadron.

JELlicoe VEERS OFF TO AVOID TORPEDOES

Whether he should get such support or not, was settled for good and all at 7:23 p. m. Lord Jellicoe has explained with complete detail how he came to give the order he did at this critical moment. Shortly after 7 p. m. Scheer detailed a force of light cruisers and destroyers to make a torpedo attack upon the Grand Fleet as they were forming their new line parallel to the Germans. This mixed flotilla led down towards the center of the British line, then turned sharply and continued in a direction parallel to, but opposite to that which our battleships were following. Lord Jellicoe rightly calculated that this maneuver portended a torpedo attack of a very aggravated character on the British ships. He timed the attack to have been made at round about 7:10 p. m., and that at 7:23 p. m. the under water weapons would be on the verge of reaching his ships. Accordingly at that moment he effected a turn of his whole line away from the Germans by subdivisions of two ships each. The ships turned first two, then two more points to the left, which brought them on to a course at half a right angle away from their former course. They held this course for ten minutes and, at the end of it, reformed on a line parallel to their old course. As they reformed, the expected torpedoes passed in considerable numbers through the rear ships of the line. The distance from the original position of the Fleet to the position it had assumed by this turn was about 1,750 yards, which served to diminish the speed of the torpedoes when they actually reached our line. This enabled the captains to see and maneuver to avoid them—a fine example of seamanship. Unfortunately, however, this maneuver, while securing the safety of the British Fleet, was exactly what Scheer wanted for seizing the only chance of safety for his own Fleet. (Diagram, page 125.)

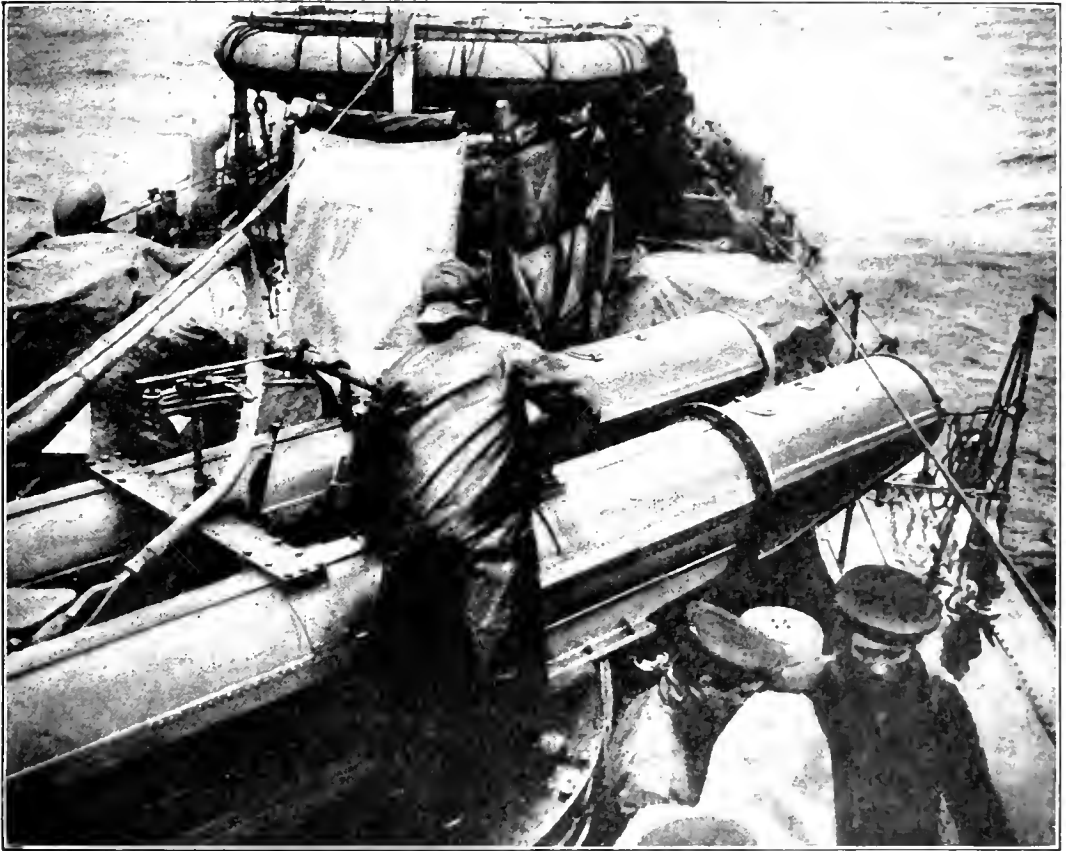
GERMAN FLEET ALSO TURNS AWAY

The turn of the British Fleet began, as we have seen, at 7:23 p. m. At 7:25 p. m. Scheer initiated a simultaneous turn in a diametrically opposite direction. But, instead of turning only half a right angle and

in subdivisions of two ships, he turned all his ships a full right angle, and turned them together. Thus, the German Fleet, which was proceeding, let us say, on a southwesterly course in line ahead at 7:25, was two minutes afterwards proceeding on a northwesterly course in line abreast. By the time, therefore, that the British turn had been completed,

two Fleets led to the action being broken off.

The problem I am setting myself to answer is this. What is the probable explanation of Sir David Beatty's keeping in close action with only four ships against the whole German Fleet between 6:14 p. m. and 6:20 p. m., and, when reinforced by Hood,



Training Torpedo Deck Tubes on the Target Before Dropping the Torpedo Into the Water

that is at 7:33 p. m., the German Fleet had for eight minutes been proceeding at full speed in a direction 135° away from that ordered by Lord Jellicoe. Thus, although the British turn by itself would only have increased the range by 1,750 yards, the gap, when the ground which the German Fleet had made in the time was added to it, must have been between five and six thousand yards at least. Thus the combined maneuvers of the

taking his seven lightly armored ships again into close action between 6:20 p. m. and 6:50 p. m.? What again is the explanation of his movement at 7:10 p. m. to close the German Fleet, and his desisting from pursuing that closing movement, when, at 7:23 p. m., he found he was getting no support from Sir Martin Jerram's squadron?

The answer to these questions must, of course, to a large extent be based on pure

conjecture. On the other hand, the materials on which we can base that conjecture are now supplied to us; and the inferences to which this material leads we can, it seems to me, accept with some confidence. The root of the matter becomes apparent if we look at the elements of the problem as they existed at 6:00 p. m. At that moment it was apparent to Sir David Beatty and to Sir John Jellicoe—and, in very few minutes, it must have become apparent first to Admiral von Hipper and then to Admiral Scheer as well—that an encounter between the Grand Fleet and the High Seas Fleet could not possibly be avoided. Secondly, it must have been equally apparent to all concerned that if that encounter took the form of an artillery engagement, in conditions in which full value could be got from the guns of both sides, then the fate of the German Fleet would be sealed. For, at the lowest computation, the artillery power of the Grand Fleet was at least twice, and might have been held to have been between three and four times, as great as the artillery power of the enemy. From these two considerations a third becomes inevitable. Scheer would be compelled to avoid such conditions, and to adopt every means in his power to effect his escape from a situation of which the issue could not be doubtful. And, fourthly, until he could effect this escape and, indeed, to enable him to effect it, he could have but two resources on which he could rely. First, he would have to save his ships as well as he could by smoke, so as to confuse and thwart the gunnery of his opponents. Secondly, he would have to threaten the British line with torpedoes so as to throw them, if only for a few moments, off their course and then to seize the opportunity so gained to make a *sauve qui peut*. Finally, the flight to be effective would have to be a flight in line abreast.

AN INTERESTING CONJECTURE

Long before any authentic details were available to elucidate the story of this battle, I made a study of the situation for my volume, *The Navy in Battle*. In many particulars I was deceived by the syncopated or deliberately misleading statements made in the official dispatches. But the analysis to which the situ-

ation lent itself was quite unaffected by any ignorance of detail here and there; and, although neither I, nor any other lay student of the war, knew that Scheer actually had retreated in line abreast at 7:25 p. m., I indicated in my study that it was only to such a retreat and to no other, that Admiral Scheer would look for an escape from an artillery engagement on parallel courses, should such an engagement ever result from the Grand Fleet's maneuvers. It seems to me certain that if this resource of Scheer was so obvious to a layman, it must have been equally obvious to the Vice Admiral commanding the battle cruisers.

If this conjecture is well founded, the explanation of Sir David Beatty's maneuvers at 6:14 p. m., between 6:20 and 6:40 p. m., and his indication for the right maneuver between 7:10 p. m. and 7:20 p. m. become perfectly simple. The task of the Battle Cruiser Fleet, once the forces were joined, was, as we have seen, to facilitate the destruction of the enemy by the Grand Fleet. The best form that assistance to this end could take was clearly not just the contribution to British artillery which the battle cruisers could supply, important though that contribution was. The battle cruisers did destroy *Lützow* between 6:30 p. m. and 6:40 p. m. and the loss to the enemy was a grave one. But far more important was it to limit the enemy's movements and so hold his entire force to conditions in which escape from the united British Fleet was impossible. The real significance, then, of the phase between 6:14 and 6:50 p. m., so far as the battle cruisers created it, is that during this time it was impossible for the Germans to effect that line abreast retreat which they afterwards achieved; and they were unable to effect it because, with four or six battle cruisers engaging their van, it was quite impossible to turn these ships together. For this would have meant throwing the guns of five ships out of action altogether, and not only leaving the van ship to engage the broadsides of six British vessels, but the whole line exposed to an annihilating fire—an unthinkable contingency. So long, therefore, as Sir David Beatty could keep the van engaged at close range, so long the Germans had to keep the line-ahead formation.

JELlicoe's SUPPORT LOST TO BEATTY

Would it have been possible to attain this end again after 7:00 p. m.? Even if we ignore the circumstantial report that Sir David Beatty actually proposed a certain course to the Commander-in-Chief, it is quite clear from the plan of the action that no other inference can be drawn from his movements than that he had such a plan in mind. At five or six minutes past seven, when he actually passed

away. Clearly, then, the Second Battle Squadron, which *King George the Fifth* was leading, could have closed the range to 10,000 yards and so kept the whole German van in comparatively close action, if she had converged towards the German course no further than the battle cruisers actually did. And is it not clear, had these eight ships formed up in the cruisers' support, that closing at a still sharper angle would have been possible? There is no reason at all, it seems to me, why, if



Undersea and Underfoot.

Zeebrugge and Jutland Heroes

This group of British veterans of the two greatest naval battles toured England in 1919 in the interest of the British Victory Loan.

ahead of the leading division of the Grand Fleet at a distance of hardly more than a mile, the course of the Grand Fleet diverged slightly from that of the Germans—that is to say, the range between *King George the Fifth*, which was in the van, from the fifth ship in the German line, was about 12,000 yards and was gradually increasing, so that at 7:25 it was nearly 15,900. *Lion* crossed this track, as I have said, at an angle of very nearly 45°. The result was that *Lion's* range decreased in this interval from 12,300 to about 10,000 at 7:23, when the Grand Fleet turned

the Second Battle Squadron had closed the range to 8,000 yards, the battle cruisers steaming at full speed might not have caught up and overlapped the German van once more.

Had this been done, we should have had at 7:23 p. m. a situation very similar to that at 9:35 p. m., save for one enormous difference, and this in our favor. At 6:35 p. m. the German Fleet could turn in succession, and the more the turn developed the greater the concentration of fire that the enemy could bring against our six battle cruisers. But had

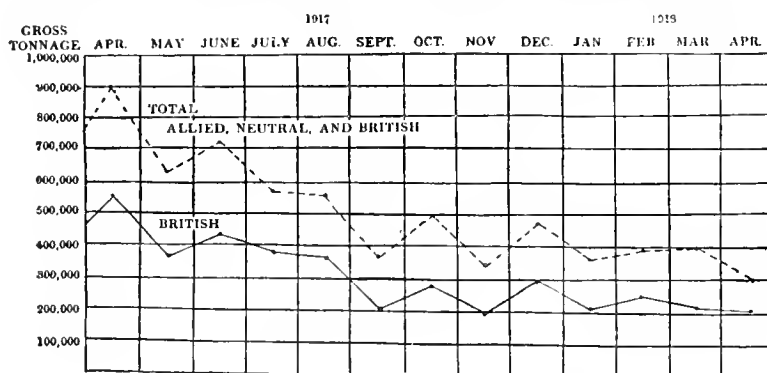
not the leading four or five, but the leading twelve, ships been engaged by the eight ships of the Second Battle Squadron, as well as by the six battle cruisers, then, not only would the turn-together and retreat-in-line-abreast have been impossible, but no turn of any kind would have been possible at all. In other words, the Germans would have had to fight it out in their then formation.

ACTION MIGHT HAVE BEEN DECISIVE

It seems, then, as if the explanation of Sir David Beatty's tactics is this: By engaging the enemy's van with his own ships *alone*, he could always prevent a retreat in line-abreast. Accordingly between 6:14 p. m. and 6:35 p. m., he made this attack on the van with all the vigor he could. But the attack on the van by the battle cruisers only could not prevent a turn-in-succession. As the enemy Fleet would be turning on interior lines, the advantage of concentration passed rapidly from the British to the German side. Shortly after 6:40 p. m., therefore, the battle cruisers rightly went out of action, because unequal to taking on the whole German Fleet unsupported. After 7:00 p. m. it was impossible to reproduce the 6:14 p. m. conditions, because the German Fleet was ahead, and to get a similar effect to that achieved by the battle cruisers alone, the attack on the van would have had to be made by a far greater force. The only force available was Sir Martin Jerram's Second Battle Squadron—

and this, fortunately, was not menaced by the torpedo attack. Had this squadron turned together in Sir David Beatty's wake and closed the Germans, from eight to twelve of their vessels could have been closely engaged while the fast battle cruisers worked round their van. In such a situation as this it would have been a mere matter of moments for superior gun fire to have asserted itself.

The fact that Jutland was not the overwhelming victory it might have been was due solely to the fact that the Second Battle Squadron obeyed the general fleet order to turn four points to port, instead of turning the four points to starboard, which following the battle cruisers would have involved. And the curious thing is that it is hardly conceivable that the Commander-in-Chief really wanted the unmenaced van to fall back with the rest of the Fleet. But the terms of his order were quite explicit. Sir Martin Jerram probably thought that he had no alternative but to obey. But obedience must have gone sorely against the grain, and when the day was over there were surely many in the Fleet who remembered how, at the battle of St. Vincent, a certain captain, acting, not only without, but against, orders, left the British line and attacked the Spaniards single-handed, and how other captains followed his example, so that a great victory was won, and the Commander-in-Chief was made an Earl, though it was through no order of his that his Fleet had gained the laurels of immortal glory.



The Conquest of the Submarine

In April, 1917, the United States having entered the war, the American Navy coöperated with the British. Improved methods for dealing with the submarines, especially by means of the North Sea mine barrage, effectively checked the U-boat raids on shipping until, by April, 1918, they had become negligible, as the above chart shows.

MOVING OUR TROOPS OVERSEAS

The Official Figures of Uncle Sam's Prodigious Effort to Increase the Allies' Man Power

BY VICE-ADMIRAL ALBERT GLEAVES, UNITED STATES NAVY

IN the middle of April, 1917, the condition of the Allies was desperate; General Nivelle's offensive of April 16th had been lost to France with disastrous consequences; the Russian revolution had taken place; and conditions in England were desperate. The morale of the French Army was at lowest ebb, and British supremacy of the seas had been challenged by the U-boat. The United States had declared war April 6th, but had not intimated that she would take any active part abroad. Indeed, her war preparations indicated a defensive attitude, although it was evident that moral support alone would afford but little comfort to our Allies. The urgent need was for men and guns to reinforce the hard pressed French and British armies in the field.

In this crisis Great Britain and France sent commissions to President Wilson to urge our immediate and active participation, both by sea and land. Vice Admiral Sir Montague E. Browning headed the British delegation, and he requested as many destroyers as possible,—at least six. "Even one," he said, "would be better than nothing." He urged the moral effect of the United States flag flying in cooperation with the British Jack in the War Zone.

General Joffre pleaded for at least one division of troops at the earliest possible moment, and he placed the limit of our contribution to the cause at about 400,000 men. The point emphasized by these special envoys was that however insignificant in point of numbers or equipment the first reinforcements ashore and afloat might be, they would show unmistakably to the Central Powers that the intention of the United States was to use her armed forces to the limit with the Allies. How amazed they would have been could they have foreseen the extent of America's answer.

THE DESTROYER FORCE WAS READY

When the order came for the destroyers to go abroad they were ready; and they might have sailed direct from Hampton Roads as soon as fueled and provisioned for the cross Atlantic voyage, had the Department considered such quick dispatch necessary.

When the United States entered the war I was flying my flag in the armored cruiser *Seattle*, and had been in command of the destroyer force since November, 1915. As Germany developed her submarine campaign, it became evident that should war come there would be an immediate demand for destroyers. During the winter months of 1916-17, therefore, in addition to the usual exercises with guns and torpedoes, the destroyers carried out a series of tactical and strategical evolutions, especially designed to train the personnel and test material under simulated war conditions. In this way a sound doctrine based on experience was developed which brought the destroyers to a high pitch of fighting efficiency. Deficiencies in material were discovered, and on February 21, 1917, I addressed a letter on this subject to the Commander-in-Chief. In retrospect the following excerpts are of interest:

1. The Commander, Destroyer Force, estimates that the present situation demands that all destroyers be put in thorough readiness immediately for service on the high seas.

2. When war is declared there will doubtless be an immediate demand for destroyers and cruisers, which will probably be met by releasing destroyers from duty with the Fleet, and by immediately placing in full commission all destroyers and cruisers.

4. It is recommended that all destroyers not materially ready be immediately sent to Navy Yards for repairs, and that their duties of pre-

serving neutrality, etc., be taken over by destroyers now ready for distant service, keeping with the fleet only such destroyers as are absolutely necessary for its safety.

6. It is recommended that all destroyers of Flotillas One and Two be sent to Navy Yards to fit out for full commission, and be put in thorough readiness for distant service.

7. It is recommended that all complements of all destroyers be filled.

THE LACK OF TRANSPORTS

Due to lack of transports, it was not such an easy matter, however, to get the Army across. The War Department had agreed to send about 10,000 troops, and the Navy Department promised to convoy them. No time was lost in chartering available vessels and converting them into troop transports; at the same time the Navy Department began to as-



Nearing the Coast of France

A transport crowded with American soldiers, on the way to the battlefields of Europe.

8. It is further recommended that no officer who has not had experience on a destroyer, and who is below the rank of Lieutenant be ordered to command any destroyer, and that such orders as may be necessary to put this recommendation into effect be immediately promulgated.

The prompt action taken by the Navy Department on these recommendations made possible Commander Taussig's famous report to the British Admiral at Queenstown, "We are ready now."

At New York the ships which were to act as escorts.

Although these preparations were conducted with the greatest secrecy, the outfitting was done at New York, mainly at Hoboken, and the German Intelligence Department would not necessarily have possessed super-knowledge to have had fairly accurate information of what we were doing. There can be no doubt that they were informed of the sailing, as events afterward proved.



Vice-Admiral Albert Gleaves

Who was in command of the Convoy Service protecting American transports and supply-ships on their voyages across the Atlantic.

THE FIRST EXPEDITION TO FRANCE

On 23rd of May, 1917, I was informed in Washington that I had been selected to command the first expedition to France. I returned to New York at once, and personally inspected the ships which the War Department had taken over; after consulting with the Army Quartermaster in charge of the conversions we notified our respective departments that the expedition would be ready to sail on June 14th, and accordingly at daylight on that date in an exceptionally thick fog, the entire force got under way from North River and the Lower Bay, and stood out to sea in prearranged order. It was a memorable occasion when the transports backed out into the river from their piers, and the cruisers, yachts, and destroyers weighed anchor. Only the most skillful handling of the ships by their captains could have prevented collision at the start, but the necessity of the occasion justified all risks.

The force was divided into four groups, which were scheduled to sail from Ambrose Channel Light vessel at intervals of two hours; the first group was the fastest; the fourth group the slowest. The sailing interval was thus arranged to avoid congestion at the port of arrival. The schedule was adhered to, except that the fourth group was delayed several hours by the Navy Department to receive belated mail, a few special packages and some additional stores. The group formation was adopted, as obviously it would have been unwise to have sent the entire force through the submarine zone *en masse*, and the different speeds of the groups separated them more widely every hour.

The entire number of vessels in the expedition was thirty-seven, composed of cruisers, destroyers, converted yachts and transports. The total number of troops in the first division was 15,032, under command of Major General Sibert, whose headquarters ship was the steamer *Tenadores*. The cruisers were *Seattle* (flagship), *Charleston*, *Birmingham* and *St. Louis*. The destroyers were *Wilkes*, *Terry*, *Roe*, *Fanning*, *Burrows*, *Lamson*, *Allen*, *McCall*, *Preston*, *Shaw*, *Ammen*, *Flusser* and *Parker*. The converted yachts were *Corsair* and *Aphrodite*. The transports were *Tenadores*, *Saratoga*, *Havana*, *Pastores*, *Momus*,

Lenape, *Antilles*, *Mallory*, *Finland*, *San Jacinto*, *Henderson*, *Hancock*, *DeKalb*, *Dakota*, *Montanan*, *Edward Luckenbach* and *El Occidente*.

THE PROBLEMS OF TRANSPORTATION

In fitting out this expedition the Navy entered a new field. It is safe to say that in our peace time studies of the conduct of war, we had directed the larger part of our consideration to the military and naval requirements of situations presupposing that any possible enemy would bring his army to us. I can recall no major problem of the War College Course that contemplated the transportation of an American Army to Europe. Therefore, when suddenly confronted with the proposition we found elements for new thought. The organization, supply, and sanitation of types of ships unfamiliar to the Navy for the transportation of troops overseas presented serious and complex problems, which demanded speedy solution. It was fully appreciated that dissatisfaction among the troops, arising from lack of medical attention, poor food, or uncomfortable living quarters might damage their morale, and it was paramount to land the soldiers fit and in good spirits.

PROTECTION, ESCORT AND ROUTING

Naturally the question of protection raised greatest concern. This, of course, involved the routing of the ships across the ocean, as well as their material protection. These ships were to be crowded to the utmost and a disaster to even one would have, as some one afterward remarked, as disheartening an effect upon the nation and the Allies as the first Bull Run. In the first place life-saving equipment was provided to take care of the entire ship's company. Stringent orders were issued that no lights were to be shown at night—every effort was made to prevent the ships "torching"; smoking on deck was absolutely forbidden. The gun crews slept at the battery and ate their meals there. Numerous lookouts were stationed below and aloft.

Generally speaking, the formation of each group was to place the transports in the center, while the escorting ships were disposed on the flanks in such a way as to provide all



© H. Mullen, Jr.

Battleship Fleet Cleared for Action in the Atlantic

Eight first-class fighting ships of the North Atlantic fleet in battle formation during maneuvers. These ships are the equals of any of their class in any navy.

around protection. The *Maumec*, oil tanker, was sent on several days ahead of the expedition, with orders to maintain a certain position on the route for the purpose of refueling the destroyers at sea, a maneuver involving special gear and seamanship, which had been successfully developed in the destroyer force only a few months before. Without the ability to oil these destroyers at sea the expedition would have been greatly

by a destroyer division from Queenstown and later by two French sloops which had been sent out to meet us, and to act as escort to Quiberon Roads. The next morning we arrived off St. Nazaire.

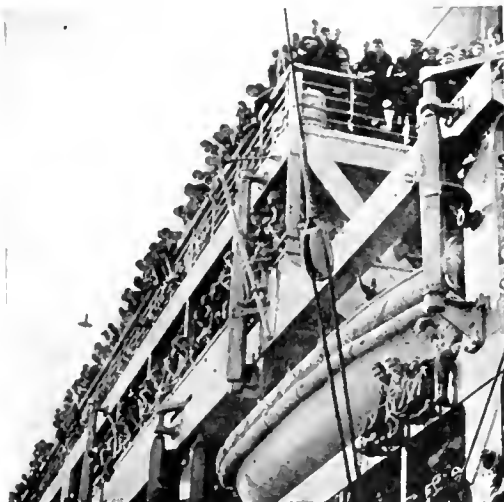
The second group was also attacked by a submarine when about 150 miles off the French coast. Commander Neill, who attacked the submarine, was subsequently decorated by the British government for this exploit. The third and fourth groups arrived on schedule time, and on June 26th the last vessels were safely anchored in the St. Nazaire Roads.

This was only the beginning, but the way had been pointed out, and from this modest start was rapidly developed the greatest transport fleet in history. Subsequent voyages were of greater magnitude, but different only in details. Neither winter gales, nor heavy seas, nor the spread of submarinism to the very gates of our harbors ever delayed the sailing of a transport by an hour.

While we have cause for satisfaction in this troop transportation achievement there is an important lesson for the future which should give us pause. It is this: A nation, situated as is the United States, must have a flourishing merchant marine if she is to be self-reliant. Due to the failure of the United States to develop a deep sea merchant marine we were forced to depend upon foreign bottoms to carry a little over half of our Army abroad. Moreover, a large part of the United States naval transport fleet was made up of seized German ships. The following figures illustrate this point.

OVER 1,100 TRANSPORTS WITH TROOPS

There were, in all, 1,142 troop-laden transports that sailed from these shores for Europe, and they carried a total of 2,079,880 soldiers. Forty-six and one-quarter per cent. were carried in United States ships, and all but 2½ per cent. of these sailed in United States naval transports. Lacking a large merchant marine, our government was compelled to contract with foreign governments for the transportation of 53¾ per cent. of this Army in foreign bottoms. At great expense, a total of 208 foreign ships were employed: 196 British, eight French, two Italian, one Norwegian,



The First Glimpse of France

delayed, because all except the newest of them would have had to be towed.

FIRST SUBMARINE ATTACKS

The route of the expedition lay well north of the Azores, as it was known at that time the Germans were using those islands as a submarine base. The so-called submarine zone extended to 17° west longitude, but the latest reports received from the Navy Department before sailing showed sinkings as far west as 30 degrees. I thought it probable that we would encounter submarines any time after passing the 25th meridian, and all the ships were so informed by the secret routing instructions and sailing orders which I issued prior to our departure.

The voyage was uneventful save for a night attack against the first group by submarines on the 22nd of June, 1917, in latitude 48°00'00" north, longitude 25°50'00" west. The following day the first group was met



© Underwood and Underwood.

The Eyes of a Man-of-War

In the battle of Jutland the first news of the presence of the German Fleet came from the man aloft on the mast of a British scout ship. Day and night the lookout in the crow's nest searches the sea with the naked eye or with a telescope.

TABLE SHOWING TOTAL OF UNITED STATES TROOPS TRANSPORTED AND THE SHIPS THAT CARRIED THEM

Prepared by Statistical Officer, Cruiser and Transport Force, United States Atlantic Fleet

1917	Carried by U. S. Naval Trans-ports	No. of U. S. Naval Trans-ports Sailed	Carried by British Ships	No. of British Ships Sailed	Carried by British-leased Italian Ships	No. of British-leased Italian Ships Sailed	Carried by Other U. S. Ships	No. of Other U. S. Ships Sailed	Carried by Other Ships (French, Italian, &c.)	No. of Other Ships Sailed (French, Italian, &c.)	Total United States Troops Transported	Total Ships Sailed	Percentage Carried by U. S. Naval Trans-ports	Percentage Carried by British Ships	Percentage Carried by British-leased Italian Ships	Percentage Carried by Other U. S. Ships	Percentage Carried by Other Ships	Under United States Naval Escort	Under British Naval Escort	Under French Naval Escort	Percentage Under U. S. Naval Escort	Percentage Under British Naval Escort	Percentage Under French Naval Escort
May.....	0	0	508	2	0	0	1,035	3	0	1,543	5	67	33	0	0	0	34½	0	258	1,285	0	17	83
June.....	8,855	1	1,080	6	0	0	5,156	8	0	15,001	18	50	6½	0	0	0	0	15,002	59	247	0	1	0
July.....	5,281	8	7,200	1	0	0	0	0	206	1	12,876	15	41	57	0	2	2	10,003	2,500	217	78½	20	1½
Aug.....	4,310	6	11,800	7	0	0	1,100	2	2,004	2	10,403	17	22	61	0	6	11	12,289	4,120	3,015	63	21	10
Sept.....	13,017	15	10,071	12	0	0	0	0	33,588	27	33,588	27	41	50	0	0	0	17,432	12,808	3,258	51½	39	0½
Oct.....	25,008	14	13,013	9	0	0	0	0	1,016	1	40,027	24	62½	32½	0	0	0	36,802	3,313	0	0	71½	0
Nov.....	9,088	0	10,600	9	0	0	1,235	2	1,830	1	23,722	10	41½	40	0	4½	8½	13,210	10,470	0	56½	43½	0
Dec.....	37,445	10	11,370	7	0	0	0	0	48,815	25	48,815	25	77	23	0	0	0	42,753	0,032	0	8½	12½	0
1918																							
Jan.....	25,662	16	20,514	9	0	0	0	0	1,870	1	48,055	26	53	42½	0	0	4½	35,827	12,228	0	75	25	0
Feb.....	39,077	17	0,280	4	0	0	0	0	3	1	40,230	22	81½	18½	0	0	0	48,795	444	0	0	1	0
March.....	56,278	26	27,620	14	0	0	1	1	1,805	4	85,710	45	65	33	0	0	2	73,005	12,015	0	85	15	0
April.....	97,553	37	47,302	20	2,626	2	737	11	1,704	3	120,072	63	50	30½	2	1	1½	01,808	28,704	500	73½	24½	1½
May.....	90,273	33	133,795	75	12,127	6	3,288	22	2,231	5	247,714	141	39	51½	5	1½	1	220,403	20,052	4,801	83½	11	1½
June.....	115,350	39	150,472	70	14,465	7	6,003	11	4,538	4	280,444	128	41½	50	5	2½	1½	244,031	30,012	4,801	87½	11	1½
July.....	108,115	33	175,550	80	11,502	7	4,020	13	11,806	5	311,350	147	35	50½	3½	1	4	288,332	42,320	6,608	83	15	2
Aug.....	110,401	30	137,745	74	0,376	4	8,495	15	14,358	3	280,475	140	41	48	3	3	5	237,020	22,572	25,883	83	8	0
Sept.....	107,035	35	134,570	60	7,052	6	5,511	18	5,560	3	270,070	120	41	52	3	2	2	221,208	20,081	14,601	80	0	0
Oct.....	72,002	43	94,214	57	11,008	7	4,700	17	1,050	3	184,003	127	30	88	0	3	1	130,274	51,454	2,335	70½	28½	1
Nov.....	1,101	0	10,608	12	0	0	235	3	0	1	12,124	24	10	88	0	2	1	7,451	4,073	0	61½	38½	0
Total.....	911,047	388	1,000,087	540	68,246	39	41,534	126	52,006	43	2,079,883	1,112	43½	48½	3	21½	21½	1,720,300	207,903	61,017	82½	14½	3½

The details of this operation and the anti-submarine work which made it possible are recounted in other chapters. They comprise the final phase of the War at Sea.

A broad view, however, must be taken of this decisive achievement. Success was not due to any one factor but to many contributing factors operating in combination. In the North Sea was the Grand Fleet dominating the High Sea Fleet and guaranteeing surface control; Germany, her surface ships being unable to reach the Atlantic, attempted to cut the trans-Atlantic lines of communication by means of her under-water weapons, the submarine and the mine. For a while she was successful to an alarming degree; but the Allied Navies found the antidote in time, and by guns, nets, mine fields, depth bombs, microphones, aircraft and other devices established control of the seas above, on, and below the surface; then by means of the available Allied fleet of transports and freighters full benefit was taken of this control.

In this transportation and supply of a great army we see illustrated the fundamental principle of Sea Power—Germany denied the use of the sea, and the Allies, with open sea communications, concentrating resources from all parts of the world in order to gain superior striking power at the point of contact with the enemy. This gave the Allies final victory. Thus are the teachings of Mahan vindicated.

one Portuguese and one Brazilian. Forty-eight and one-quarter per cent. of the United States overseas Army was transported in British ships, 3 per cent. in British leased Italian ships and $2\frac{1}{2}$ per cent. in French, Italian and other foreign ships.

In the month of July, 1918, during which more of our soldiers were transported in foreign ships than in any other month during the war, British ships carried 175,526, or $56\frac{1}{2}$ per cent. of the month's total of 311,359. This was the greatest number transported in any one month under the British flag. In the same month of July, 1918, 11,502, or $3\frac{1}{2}$ per cent. of the total, sailed in British-leased Italian ships; 11,866, or 4 per cent. of the total, in French, Italian and other foreign ships; and the remainder, 112,465, or 36 per cent. of the total, sailed in United States ships. This was the smallest percentage carried in any one month under the United States flag.

TROOPSHIPS CHIEFLY UNDER AMERICAN ESCORT

In the matter of providing escorts for these transports, however, the figures are more satisfactory, although here again it is to be remembered that the naval power of Great Britain was concentrated in the North Sea while that of France was held for the most part in the Mediterranean. All the troops carried in United States ships were escorted by United States men-of-war; that is, cruisers, destroyers, converted yachts, and other anti-submarine craft. Also, for the most part, the troops carried in British, French and Italian ships were given safe conduct through the danger zones by United States destroyers. In connection with this work it should be mentioned that, in addition to the twenty-four United States cruisers assigned for ocean escort duty, there were with my Force a squadron of six French cruisers to assist in this work and they did fine and useful service. Roughly, $82\frac{3}{4}$ per cent. of the maximum strength of the naval escorts provided incident to the transportation of United States troops across the Atlantic was supplied by the United States Navy, $14\frac{1}{8}$ per cent. by the British Navy, and $3\frac{1}{8}$ per cent. by the French Navy. The

Army organized and developed an efficient system for loading and unloading the ships at the terminal ports. The Navy transported the troops and safeguarded them en route.

In the transportation of troops and supplies to Europe the nation owes much to the officers and men of the merchant marine; they were comparatively few in number, but their service was invaluable, and without their assistance the Navy Department would have been embarrassed to meet the expansion of the Navy. It is a matter of profound personal satisfaction to have had the opportunity of working with these skillful sailors, and of observing them at close range. They were anxious and eager at all times to acquire naval customs, and with a willing and patriotic spirit they broke away from a life-long training on parallel but dissimilar lines to learn new customs and to attain a new point of view. They were zealous and efficient, and they served with credit and distinction. Our new-born merchant marine has a prosperous future under their guidance.

The German boast that we could never land an army in France was as empty as was their psychology in general. In our Revolution Washington acknowledged that it was the French fleet under De Grasse in the Chesapeake which made possible his victorious peace. Now, one and one-half centuries later, the American Navy has been privileged to do a like service for Marshal Foch and France.

When the armistice was signed the return of the troops was ordered, and ever since they have been returning in constantly increasing numbers at a rate which far exceeds their outgoing. In the month of June, 1919, our United States naval transports returned 314,167 fighting men in 115 sailings. In addition, in this month, foreign ships returned 26,825. If this can be taken as an indication of the future development of our merchant marine, it is encouraging. In seven months more than one million men were landed in the United States, and the *Leviathan*—the biggest of all the transports—carries almost as many people on each voyage as were carried in all the transports of the first expedition. Zig-zagging, lookouts, darkened ships have passed into history. The seas are once more free to those who pass on their lawful occasions.

PART II. MINOR NAVAL OPERATIONS AND PERSONAL NARRATIVES

By WILLIAM O. STEVENS,

Professor of English, U. S. Naval Academy, Annapolis, Author of "The Story of Our Navy"

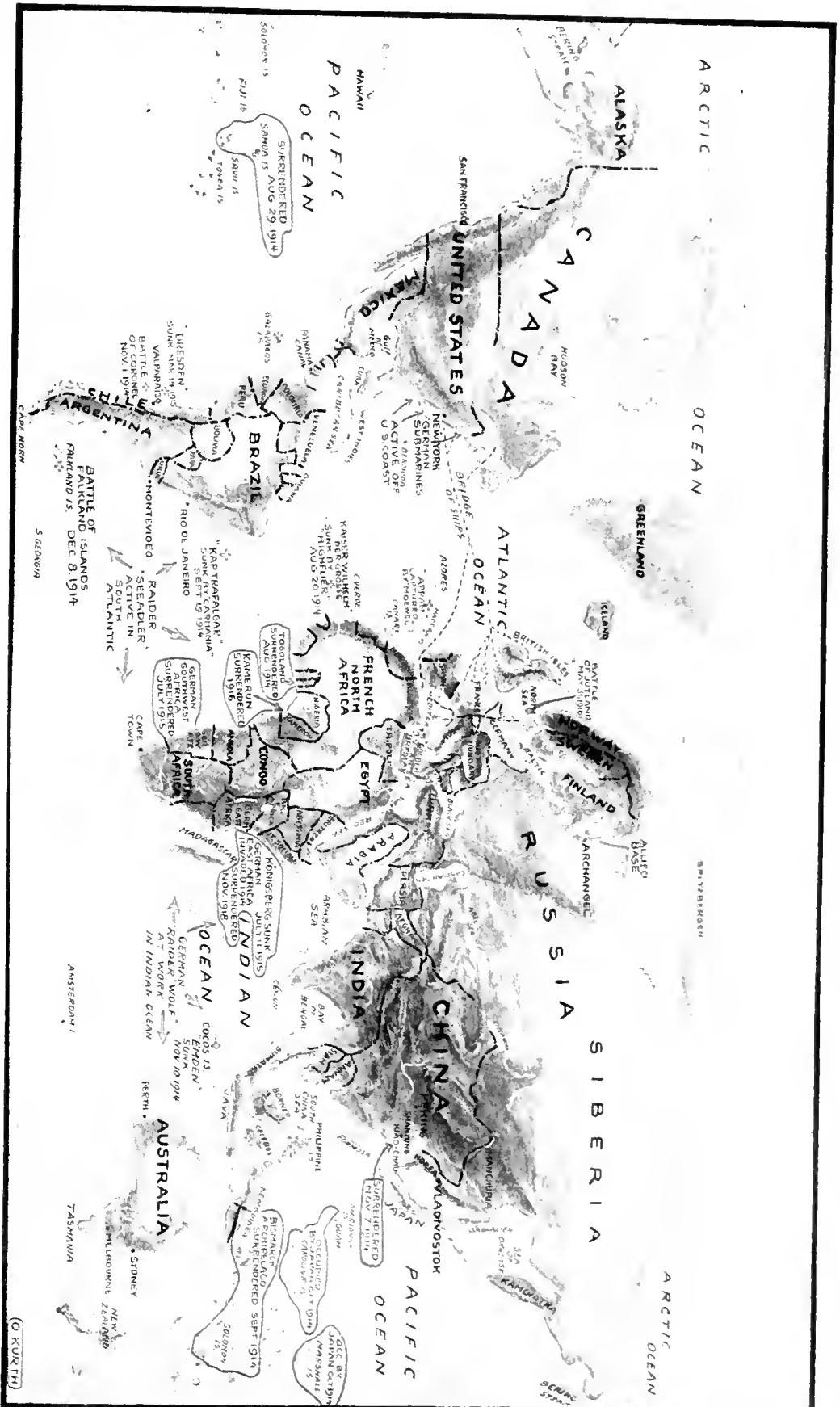
INTRODUCTION

THE material in the second part of this volume comprises, as the title indicates, the lesser actions and the personal experiences. In brief, it is the human side of the Navies in this war. Many an action that is small in its scale of operations or its influence on the war has nevertheless great interest from the standpoint of enterprise, fortitude, and daring, and helps to make a nation's traditions. It is therefore stories of this character, especially the descriptions given by the men who took part, that are collected in Part II. Of course it is impossible to make a complete record of all the individual engagements or the various activities in the space available, but enough is given to make a fair picture of the conditions and the means of fighting on the seas, and the fine heroism they produced. "Give me iron in the men," said Farragut, "and I'll not ask for iron in the ships." In the following pages such men of iron will be discovered, men for whom the word "impossible" did not exist, and who made of each obstacle only a step to victory.

SECTION I—THE SEA RAIDERS

WHEN the Confederate cruiser *Alabama* chased American shipping off the Seven Seas during the Civil War, her captain, Semmes, managed to elude the Union warships sent on his trail by calculating just the amount of time it would take for news of his whereabouts to reach the nearest enemy cruiser and making the most of that margin of time. Those were the days when there were no cables to flash the news of a naval engagement in some far corner of the ocean to every capital of the world. With the wide and intricate network of telegraph lines and cables of these days, and especially with the universal use of wireless, everybody said that the day of the commerce destroyer was over. Moreover, the *Alabama* had saved herself the necessity of frequent coaling by hoisting her screw and footing along most of the time under canvas. No modern cruiser could hope to save coal in that way. Thus these two facts, the instantaneous dissemination of news and the dependence on coal, were supposed to have made any repetition of the *Alabama* story impossible. But when war broke out in 1914, the little German cruiser *Emden* sped away on the high seas, and for two months carried on a commerce-destroying cruise that for dash, cleverness, and daring, quite put the famous old *Alabama* into the shade.

It is pleasant to add, also, that this cruise was marred by none of the "frightfulness" that made the names of certain other German naval officers hated and despised by all the non-German world, for Captain Karl von Müller of the *Emden* distinguished himself no less for



The War on the Sea

This map of the world illustrates the vital part played by naval power in driving German war-vessels and commerce-raiders off the seas. It was the command of the ocean highways, maintained first by the British fleet and afterward by the combined British and American fleets, that not only kept the Allies from starvation, but made it possible to transport in safety over 2,000,000 American troops to Europe, and an even greater number of British troops from England to France and to other fronts.



chivalry than for pluck and resourcefulness. Heartly tribute to this fact comes from his enemies, as the following paragraph from Sir Henry Newbolt's account of the *Emden* bears witness:

*"Of all the sea stories in the Great War, the story of the *Emden* is the pleasantest to tell or to hear told. Pleasantest, I mean, to us—not because it ends with a British victory, but because it gives us the opportunity which every Briton naturally desires, to honour the sportsmanship of an adversary. Captain Müller of the *Emden* outwitted us for a time, hit us hard, and cost us millions; but he always seemed to be a jolly fellow—he was not only enjoying his adventures, but he positively made us enjoy them too, for he made us admire him, and admiration is one of the happiest feelings in life. We eagerly and relentlessly desired his extinction as a hostile force; but I am certain that if he had been killed when he lost his ship there are few among us who would not have regretted him."

At the outbreak of the war the light cruiser *Emden* was a unit of the German China squadron based at Tsingtau (Kiaochau) under Admiral von Spee. To avoid certain capture, von Spee took his ships into the Pacific and thereafter conducted a surprising campaign that was stopped only at the Falkland Islands. The *Emden* he dispatched into the Indian Ocean to cruise at will and destroy as much Allied shipping as possible. In spite of French, Russian, British and Japanese cruisers, the *Emden* maintained her commerce-destroying career for two months, and her story is so entertaining and adventurous that it deserves to be read in detail. Fortunately we have it as told by the *Emden's* Executive Officer, Lieutenant Hellmuth von Mücke. It runs in part as follows:

THE CRUISE OF THE *EMDEN*†

The Extraordinary Adventures of the German Commerce Destroyer, and How She Was Brought to Grief by the Australian Cruiser *Sydney* After Sinking 24 Enemy Ships with Cargoes Valued at Millions

I

ALL hands on the quarterdeck,' was piped by the boatswain's mates throughout the ship. Soon the entire crew was assembled on the quarterdeck. And each man knew what was coming.

"About 2 p. m., August 2, 1914, while cruising in the middle of the Yellow Sea, Commander von Müller appeared on the poop, holding in his hand a telegram such as we used for radio reports. Six hundred eyes eagerly watched the lips of the captain, as he began:

"A radio has been received from Tsingtau as follows: 'His Majesty, the Kaiser, has, on August 1, ordered the mobilization of the entire Army and Navy. Following an invasion

of German territory by Russian troops, the Empire now finds itself embroiled in war with Russia and France. . . ." Commerce destruction is our principal rôle. To the best of our knowledge, the Russian and French men-of-war are gathered near Vladivostok. Therefore, it is quite likely that we may fall in with them. In that case, I know I can safely rely on my entire crew.'

"Three cheers for H. M. the Kaiser resounded over the broad surface of the Yellow Sea. Then followed the order, 'Clear ship for action'; all hands going to their posts. And so we were at war. . . ."

"'Battery ready,' 'torpedo-tubes ready,' 'engines and auxiliaries ready,' 'repair party ready,' 'steering-gear ready,' 'signal and radio apparatus ready.'

"These reports were made one after the

* *Tales of the Great War*, p. 139.

† Reprinted by the kind permission of the U. S. Naval Institute.

other in such rapid succession that I was torn from my thoughts. A hasty inspection of the ship and then I could report to the captain, 'The ship is cleared for action.'

"At 15 knots we steamed toward Tsushima Straits. War watches were set on the *Emden* as darkness approached. This was done as follows: One-half the crew stood watch at

seen in the distance. Of course the ship was darkened. All lights visible from outboard were covered and torching at the smokepipes avoided. . . .

THE FIRST PRIZE

"At 4 a. m. the port watch, which I commanded, was relieved. The captain took charge. Day began to break. I had hardly reached my room and prepared to get some sleep when I was awakened by the shrill calls of the alarm bells and the loud stamping of many running feet. 'Clear ship for action,' was passed from one compartment to another. And now everybody was ready at his battle station. Were we really lucky enough to meet a Russian or a Frenchman on the first day, as our dispatches indicated them to be in the neighborhood of Vladivostok?

"In the gray daylight we saw, dead ahead, a large vessel, lights out, that appeared to be a man-of-war. The captain was approaching her at full speed. The ship had hardly seen us when she came about in short order and headed away from us. Heavy black clouds issued from her smokepipes, a sign that her engines were working at full power. The pursued vessel immediately set a course for the Japanese Islands, about 15 sea-miles away. A heavy smoke cloud hung close to the water and soon enveloped us entirely. As we could see only the mast heads, we had no means as yet of recognizing the ship. But her actions clearly showed that she was not a neutral vessel. Of this, however, more later.

"Meantime it became light. The signal, 'Stop at once,' flew from our foremast. As the order did not, after a certain time, produce results, it was followed by a blank shot, and, as even this did no good, we fired a few shells at her. There was now no more use of the steamer's trying to reach neutral Japanese waters. When our shell fell close aboard her, she stopped, turned around and hoisted the Russian flag at all mast heads. And so, in the first night of the war, we took our first prize. It was foreseen, on the whole, that this would be the first German prize. She was the Russian volunteer steamer *Rjesan*. During peace she plied the passenger trade between Shanghai and Vladivostok. During war she would be armed and used as an auxiliary cruiser. She was



© Brown Bros.

Commander Karl Von Mueller
Hero of the German Cruiser *Emden*

their stations for action at the guns, searchlights, lookout, torpedo-room and in the engine- and fire-rooms, while the other half were permitted to sleep in their clothes ready to hasten to their stations in case of necessity. The captain took charge of one watch, the 1st Officer of the other watch.

"The *Emden* was heading northward toward Tsushima Straits. The night was pitch dark, no moonlight. Nothing could be

a brand new, speedy ship, built at the German works of Schichau. . . .

"The Russian captain made two strong protests against our taking her. She was a peaceful merchantman and it was therefore unjust to divert her. Above all he did not understand this. His knowledge of the rights of the sea was pretty weak. Our question as to why he had attempted to run away from us he allowed to remain unanswered. The captain had him informed that his fate would be decided in Tsingtau.

"The *Emden* did not take the shortest way there. Hardly had the captain of the prize noted this than he again protested, desiring to be brought to port by the shortest route. His reason, naturally, was that he feared we might encounter other Russian ships on the course we were now steering. And that was exactly our intention. We had no news as to which courses the Russian vessels were taking, but, from the strenuous protests of the captain, we concluded that we might have an opportunity of capturing one or two more. Unfortunately no more were sighted.

"According to newspaper reports we discovered that the French fleet, consisting of the armored cruisers *Montcalm*, *Dupleix*, and several torpedo-boat destroyers, should be cruising about Vladivostok. We dared not meet these in daylight. As we rounded the southern extremity of Korea the lookout in the top reported—"Seven smoke clouds to starboard." In order to be absolutely sure, the captain sent me to the top. I also saw seven distinct smoke clouds and the upper part of the superstructure of a small vessel that appeared closest to ours just over the horizon. When I reported this the captain gave the order to turn away. We made a big sweep and cruised completely around the enemy. We arrived at Tsingtau without having been annoyed. . . .

"En route we picked up a very interesting radio message. The esteemed Reuter Bureau, known all over the world for its love of the truth, sent a message which informed the shuddering readers, '*Emden* has been sunk.' We also shuddered to the marrow.

"During the coming night our prize caused us a little more trouble. Naturally she also had to darken ship. But that was easier to order than to accomplish. On board the

steamer were numerous married women passengers who were in great fear of what the barbarous hordes of Germans might do to them. Most of them were fat Russian Jewesses. Every few minutes one of them would turn on the lights in her cabin, so that finally the prize officer had to break the electric circuit at the dynamo. Thereupon they began



© Underwood and Underwood.

Japanese Torpedo Boats, Yokohama

The *Emden* escaped from the harbor of Tsingtau before Japan had declared war.

to wander about with open lights, which naturally could also not be permitted.

"On arrival at Tsingtau, the *Rjesan* was overhauled. The ship was still brand new, so that the Russians had not, as yet, had sufficient opportunity to ruin the good German machinery. Our prize could still do better than 17 knots. Therefore she was equipped with guns, manned by a German crew and set out as an auxiliary cruiser under the name of *Cormoran*.

"Tsingtau was given over to war preparations, the mine fields had been planted, the

land fortifications along the coast were manned, and feverish work was going on in the harbor. A great number of German steamers lay inside the mole. Some of these were also being fitted out as auxiliary cruisers, some were being filled with coal in order to act as tenders to the squadron. Our captain received orders here from our squadron commander, Count von Spee. This squadron, consisting of the armored cruisers *Scharnhorst* and *Gneisenau* and the small cruiser *Nürnberg*, was in the South Sea steaming northward. The *Emden* was directed to intercept the squadron at a predetermined rendezvous in the South Sea.

OFF TO THE SOUTH SEAS

"That day and all through the night all hands aboard worked feverishly. We had to coal, taking on as much as we could possibly hold, receive a great quantity of all sorts of material, increase our personnel, and make all the many preparations for war. At sunrise the next day the *Emden* left Tsingtau, followed by a great number of German ships that were going forth to meet the squadron. In the harbor there was much enthusiasm. Everybody on land envied us. As long as the war existed only with France and Russia, Tsingtau would hardly be concerned. Likewise it was unnecessary to worry about the state of the land fortifications. On the sea side were good and sufficient works that could not be destroyed by ships. The land forts, inasmuch as only a few had been constructed, were merely small and unpretentious earthworks, solely for infantry usages. Still, an attack on the land side was not to be feared, as Tsingtau was entirely surrounded by the neutral territory of China.

"Calm, clear weather prevailed as the *Emden* slowly steamed out of the inner harbor. Our band played 'The Watch on the Rhine.' The entire crew was on deck and joined in singing. Cheers were given on all sides. All were highly confident. Here was reproduced, on a smaller scale, the same war-enthusiasm as was being shown in Germany.

"The *Emden* proceeded cautiously through the openings in the mine fields. The sun had just risen. There lay Tsingtau, the crown of the Far East, golden red in the light of the

first sun rays of the young day. A picture of peace. Along the beach were long rows of clean, artistically constructed houses. The whole overlooked by the Signal Mountain. In the background were the brown stone mountains covered with a new dress of fresh, young and green forests. The church tower and its cross stood forth prominently in the light, reddish vapors of the morning haze. Further to the right the pretty and clean barracks, the government house, the bathing beach. The whole picture circled with white, the surf arising from the heaving bosom of the sea and breaking on the cliffs along the coast. Glittering pearls and diamonds were strewn in full measure by Neptune on this precious gown of nature. The charms of the farm and German industry have here produced a picture of fairyland where previously had been such a useless and rough region. All of us were in very sentimental moods. But the service called with an iron 'must.' Therefore tear yourself from this picture! On to the south!

"The steamer *Markomannia* followed us, the other steamers steering different courses. *Markomannia* remained a faithful follower to us for several months.

"On the way to the South Sea we received the radio telling us of the rupture of diplomatic relations between Germany and England and of the declaration of war by England. We were not surprised at this, and if we were a little astounded, it was due to the fact that the wire-puller of all evil had, for the first time in a hundred years, brought her own bones into danger. A few days later we were notified of the ridiculous ultimatum of Japan; which did not disturb us very much. A clean-up, that was the intention of them all.

CAPTURE OF AN ENGLISH SHIP WITH SOAP FOR A WHOLE YEAR

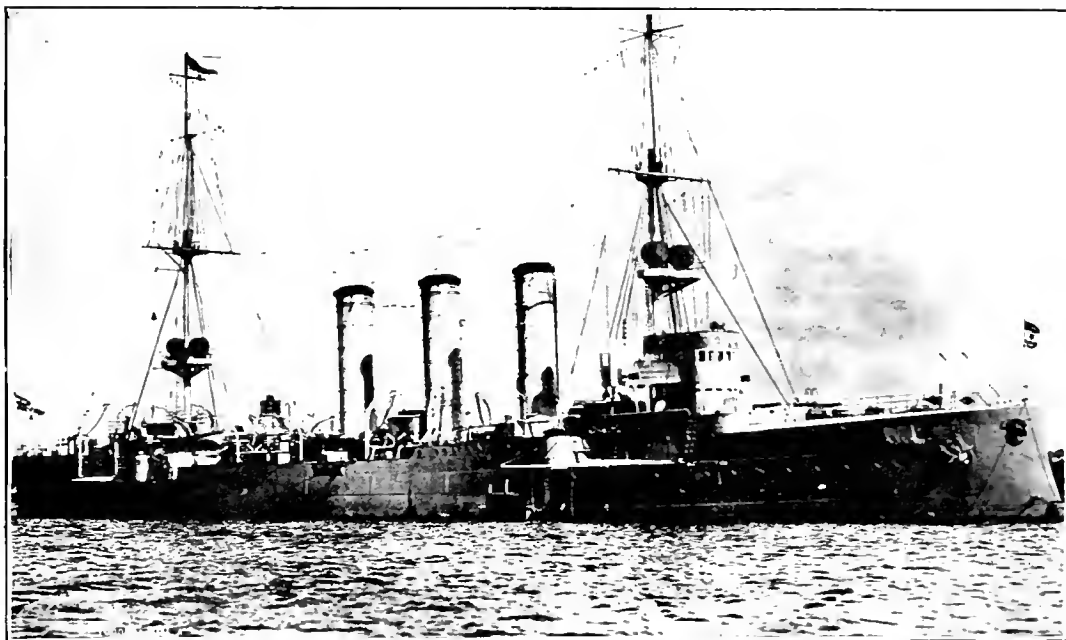
"Very early in the morning of September 11, a few hours after our squadron had received its first addition, with the rising of the sun, a large steamer appeared dead ahead who, thinking we were an English man-of-war, was so overjoyed at our presence that she hoisted a huge British flag while still at a great distance. I do not know what kind

of expression came over her captain's face when we hoisted our flag and invited him most graciously to tarry with us awhile. The steamer had left Calcutta and, having been detailed for transport duty between Colombo and France, was fitted out in fine style. Especially were we touched by the fact that she did not disown the English desire for cleanliness and therefore had taken such a big cargo of soap that our small crew, itself in the greatest need of this most necessary assistant to Kultur, would have enough to last a whole year. We also found a beautiful

At the end of the war, all neutral cargo destroyed must be paid for. The 'lucky bag' always followed along behind the *Emden* until she was finally filled up with people taken from the captured vessels. Then she was detached and sent into the nearest harbor. Under these circumstances, the *Pontoporros* was detailed to the rôle of 'lucky bag.'

BUSY DAYS SINKING MERCHANT SHIPS

"In the next few days our business expanded. It happened somewhat as follows:



© Brown Bros.

The German Cruiser *Emden*

Her career as a commerce-destroyer was short, but it formed one of the most romantic chapters of naval history.

race horse aboard. A bullet behind the ear saved the animal the agonies of a death by drowning. We had less compassion for the numerous built-in, beautifully numbered, horse stalls and gun mounts aboard the ship. A half hour later the sharks could, at closer quarters, occupy their attention with these.

"The crew of the ship was transported to our 'lucky bag.' The 'lucky bag' was always one of the captured ships which was either empty or in ballast and therefore of little value, or which contained neutral cargo and could therefore not be sunk without a loss.

"When a steamer came up, it was stopped and an officer with about ten men sent aboard. They prepared the ship for sinking and gave the necessary orders for the disembarkation of the passengers, etc. While we were so occupied, the next mast head would, according to rule, appear over the horizon. We had no need of hurrying. The steamers came willingly right up to us. When the next ship approached to the proper distance, the *Emden* steamed ahead to meet her, made a friendly signal, which notified her to proceed close aboard our previously captured

steamer. Then again an officer and some men would go aboard, prepare that steamer for sinking, give the necessary orders for disembarking the passengers, etc., and when this was concluded, the third mast head would bob up. The *Emden* approached her and the same process would be repeated. In this way we have had five or six steamers together at one spot. Of these, one would still show the tops of her smokepipes, the next would be sunk to the level of her decks, the third would be almost normal, but showing, by reason of her swaying back and forth, that she was beginning to go down. The passengers of our captured steamers would then make the most astonishing acquaintances aboard our 'lucky bag.'

"So we grazed around in the region between Ceylon and Calcutta. With us were traveling our old follower the *Markomannia* and the Greek collier *Pontoporros*, which had meantime transferred her duties as 'lucky bag' to the steamer *Cabinga*. This was an English steamer with an American cargo, that was not sunk because of the cost of the cargo.

"The *Cabinga* accompanied us for several days. She, the *Markomannia*, and the *Pontoporros* were not the only *Emden* followers this night. During our journey we made some more prizes, but these, in the interest of the passengers, were not to be sunk until daylight, because of the seaway and the darkness. All told we had six followers that night. Of these, three disappeared under the surface of the sea the next morning. . . .

"On leaving, the *Cabinga's* decks were loaded with people, all passengers of the captured steamers. And on our calling out to them, 'You may proceed,' the answer consisted in three cheers for the captain, the officers, and the crew of H. M. S. *Emden*, 'Hurrah! Hurrah! Hurrah!' All the people on the decks of the *Cabinga* joined in the cheering. How many there were can be best explained by quoting an English paper, which later on fell into our hands, in which was described the *Cabinga* on entering Calcutta as appearing not like a merchantman, but, from the number of persons to be found aboard, one could easily have imagined her to have been something like a school-ship. There were at least 400 people on board her.

"Also, later on in our wanderings, whenever our 'lucky bags,' full of passengers from sunken ships, were detached, we always received our three hurras. It seems to be an English custom to reward the murdering of small children and the killing of women and men by giving three cheers.

NOT WITHOUT A TOUCH OF HUMOR

"I wish to insert here a few remarks concerning the actions of the English when their steamers were captured. Most of them were very sensible. As soon as they had recovered from their first surprise, they would indulge in a series of complaints concerning their government, but, with one exception, never opposed the sinking of the ship. We always gave them plenty of time to gather up their private possessions. They usually devoted this time trying to save their valuable cargo of whiskey before the fishes could get at it. I can honestly say that we seldom delivered a crowd of sober Englishmen to the 'lucky bag.' After all, however, they never forgot their 'business' and endeavored by every possible means to make the ships of the rival lines fall prey to the German privateering. Usually, when the captains left their ships, they would say: 'Tell me, have you seen the steamer X?' We replied: 'No!' 'What,' returned the captain, 'haven't you seen her? Why she was steaming only two hours behind and seven miles south of me!'

"By this means we always knew in advance the name of the next ship as soon as her mast heads appeared, and in this way avoided the embarrassment of meeting neutrals.

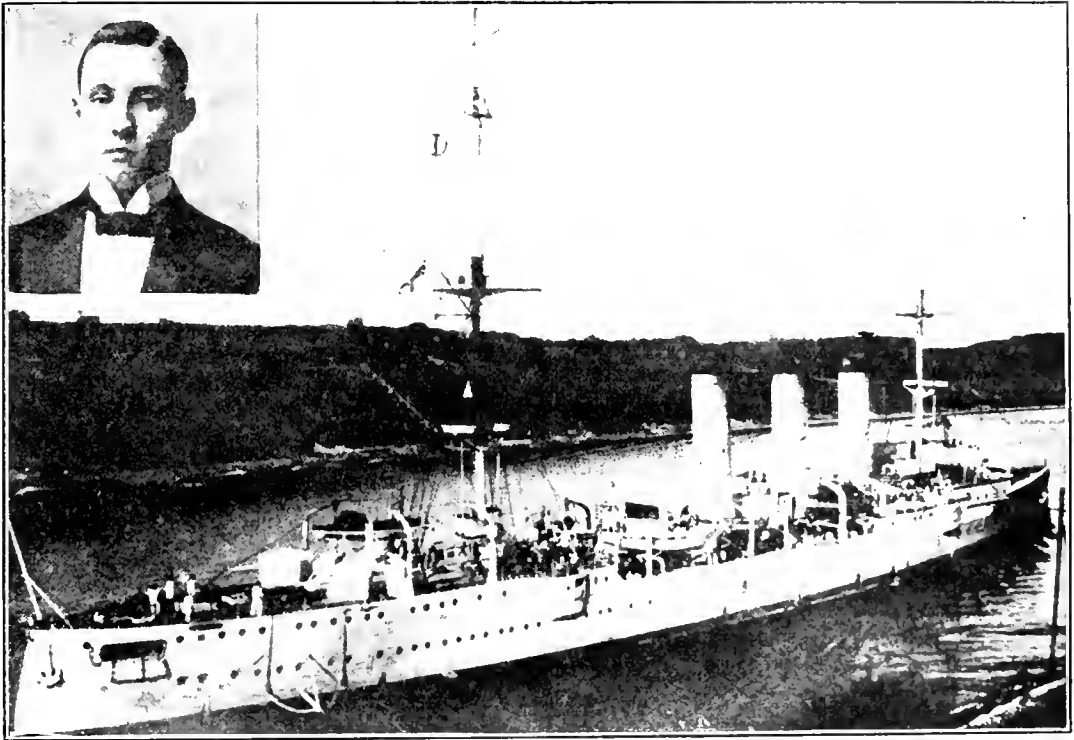
"Especially pleased was one captain who found himself in the disagreeable position of having to pilot a dredger from England to Australia. Every seaman will sympathize with this poor devil for having to deliver to Australia such a wallowing tub, which could not make more than four knots. And so the captain was very much pleased at being captured by us, a fact easily understood by any unbiased person. Seldom have I witnessed such exulting pleasure in any man. It certainly was quite a trick to bring the rolling and pitching dredger this far. And tears of gratitude ran down his rough seaman's cheeks as he cried, 'Thank God, I am rid of that

tub! I certainly have long since earned that £500 which I was to receive for taking her to Australia.'

HOW THE DOOMED SHIPS WERE SUNK

"A seaman always has a peculiar feeling when he sees a ship sinking. Even we, accustomed to helping vessels in distress, were affected not a little by the sight of sinking

ments were also filled, either by exploding bombs—this at night—or by firing shells into them. For a time the ship would totter about as if she did not know what to do with herself. Deeper and deeper she would sink until finally the rail would be awash. The waves would eagerly lap over the decks of the doomed vessel. It seemed as if unseen hands were pulling and tearing at her in order to seize their prey as soon as possible.



© Underwood and Underwood.

The *Emden* in Time of Peace

The insert shows Captain Von Mueller as a young lieutenant.

vessels, even those that we had to destroy. The destruction was usually done in the following way:

"We went into the engine-room and removed the bonnet of a main overboard discharge valve. The water immediately came into the engine-room in a stream twice a man's height and more than a man's thickness. The watertight doors to the adjoining fire-room were opened and secured against closing, so that at least two large compartments of the ship would certainly fill up with water. In addition, two smaller compart-

A shudder seemed to run through her whole structure. This was possibly a shiver of fear of the ship's body, as if she were making a final heroic attempt to avoid her fate.

"Then came the surrender, the collapse. The bow sank, the masts came up flat on the water, the rudder and screws rose, the stern high in the air. The smokepipe blew out the last cloud of steam and soot. For a few seconds the vessel would remain standing vertically, and then, like a stone, shoot down into the depths. The air pressure would blow up the last few compartments

or spaces in the stern. Columns of water, meters high, would be forced by the air pressure out of all openings, ventilators, and port holes. Then a swirling whirl, the sea closed over her, and nothing more remained to be seen of the ship. As a last greeting from the deep, about a half minute later, the loose spars, beams, boats, and such truck would come to the surface. The long planks of wood would shoot up vertically, like arrows, jumping several meters clear out of the water. The final marks of recognition of the spot where the ship sank consisted in a large oil slick, a few broken up boats, beams, life buoys, and such. Then the *Emden* would go ahead to meet the next oncoming mast head.

VON MÜLLER, "THE GENTLEMAN CAPTAIN"

"The English were extremely grateful for our allowing them sufficient time to save all their personal belongings. They also reported this in their newspapers. I am not stretching the point when I say that at the end of 1914, the *Emden* was the best-beloved ship in the East Indies. As a whole, the English had no understanding of this war. To them it is not a national war as it is with us; instead, they stand off indifferently and laud the achievements of friend and foe alike, solely from a sportive interest viewpoint. And so it happened that it was possible for the Indian newspapers to honor our captain and his ship in song and story. The captain was called 'The Gentleman Captain,' and the papers said 'He played the game and was playing it well.' . . .

"All of our original supplies had naturally long since become exhausted. But, thanks to the thoughtfulness of the English, the captured steamers were so well supplied with conserved provisions by the best English firms that our men had to exercise the greatest self-restraint in order to carry out our mission—i.e., enemy goods must under all circumstances be destroyed. Especially did we prove that candy and confectionery and such other tasty bits, because of their cognac contents, were not unsuitable even to sailormen's palates. . . .

"As we had grazed about sufficiently in this region of the Bay of Bengal, and as we noticed that no more ships were arriving, we

decided to shift our scene of operations, which was becoming more alluring each day, to the other side of the Bay, near Rangoon. And here we received our first serious setback in that not a single ship was running. Later on we read in the newspapers that the entire shipping was held up because of our presence. For all that we had to consider it a moral success that a Norwegian steamer had taken over the duties as 'lucky bag' and that we were now free of our last troublesome guests. During our trip to Rangoon, we were not sighted for more than a week. This fact caused the circumspect English Indian Government, in the interests of its subjects and to officially announce the celebration to their patient countrymen, to spread the report that the *Emden* pest had now been successfully exterminated by her sixteen pursuers, and that now the ocean trade could again be safely carried on. Of course we did not know this until later when we read of it in the newspapers.

SHELLING THE OIL TANKS AT MADRAS

"As merchantmen no longer appeared in our locality, we returned to the region of our former operations on the east coast of India. The captain decided to test the resistance of the oil tanks at Madras. The *Emden* appeared off the harbor on the evening of September 18. There, the very day before, had the official announcement of the *Emden's* loss been made. In order to properly celebrate, a hilarious crowd had assembled that night in the club. As we did not know this at that time, we unfortunately were not responsible that our shells dropped into the soup of the diners. Otherwise we would naturally have postponed our bombardment for one day. One should never unnecessarily irritate one's foe. Holy institutions must be treated with as much clemency as possible. And especially in regard to his 'dinner' is the Englishman sensitive.

"We approached to within about 3,000 meters of Madras. The lighthouse threw its friendly beams out over the harbor. It made our navigation quite simple, for which we gave our unanimous thanks to the high government of this place. In the searchlight beam we saw our object, the high, white,

red-topped oil tanks. A few shells thrown into them, several pillars of bluish-yellow jets of flame, a red, burning stream running out of one of the shot holes, an immense, heavy, black cloud, and, in accordance with the old proverb, 'A change makes for contentment,' we had this time sent several millions into the air instead of into the sea.

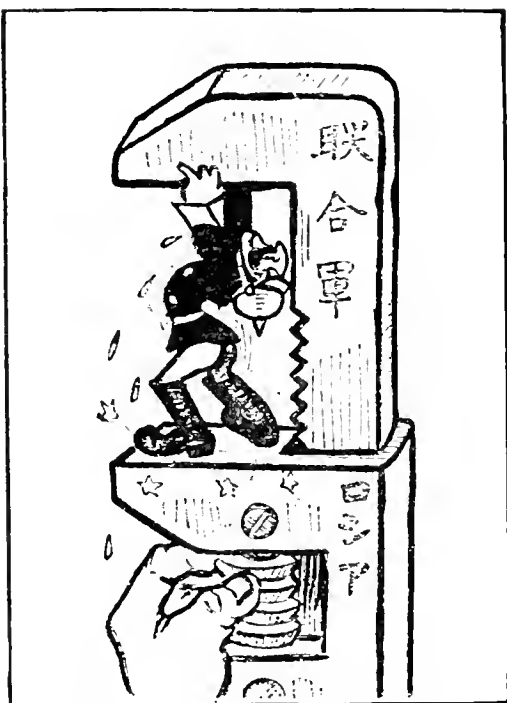
"On leaving Madras we were fired on without knowing from what direction the shells came. But there were only a few shots fired and these evidently without aiming. Later on the English wrote in their newspapers that, when we were fired on, we doused our lights and quickly disappeared. To this I would remark that we of course first approached without any lights showing, and that both the captain and I did not notice that we were being fired on, of which we were later informed by our officers stationed aft. Therefore, we had no idea of withdrawing because of the firing. In regard to the lights, we did exactly the opposite. When we finished firing we lighted up the ship, that is, we purposely displayed many lights on our port side and headed north. Soon thereafter we again put out all lights and headed toward the south.

CAPTURE OF A SUGAR SHIP

"As we later read in the newspapers, our bombardment of Madras resulted in the flight of all Europeans from the coast to the inland regions. In addition, the English established 'searchlight service,' that is, they played searchlights every night along the entire coast adjacent to their harbors. In this way they simplified our navigation very much, for which we again give our unanimous thanks to the far-sighted Indian Government of this section. On the evening of September 26th, we were close to the harbor of Colombo. While cruising back and forth we suddenly saw a dark shadow in the searchlight beams which interested us very much. At a distance she seemed rather dangerous, but this danger lessened on her closer approach. It was an English steamer loaded to the eyes with sugar. The captain of this ship, which we captured under the very guns of the English forts, because he was sighted in the beams of the searchlights of his own war harbor,

was so peeved that he objected to our orders. The deplorable result of this patriotic step on his part was that he was not allowed to take even a handkerchief along with him when he left his ship.

"Within five minutes his ship was cleared and the crew transported to our 'lucky bag.' The captain and his engineer divided the honors of being permitted to inhabit one of the temporary cells aboard H. M. S. *Emden*.



© Yoro-dzu-Chuo, Tokyo.

A Japanese View of Germany's Position

Ten minutes later the sugar steamer sweetened the suppers of the sharks.

"This English captain, as we later found out in the newspapers, told some wonderful fairy tales about the *Emden*. He set forth that he was well treated, but when brought aboard the *Emden* he did not receive treatment according to his rank. Evidently he had an idea that our captain should vacate his cabin for him. Further, he spoke rather disapprovingly of the cleanliness of the *Emden*. She was said to be dirty, scarred, and dented, in which I cannot disagree with him. It is impossible to coal for weeks at a time in the open sea, or to carry a heavy,

loose deck-load of coal, without being scarred. Had I had any idea that I would receive such a pleasant visit, I should have staked my reputation as a 1st Officer on my being able to show my guest a cleanly scrubbed and freshly painted ship. . . .

AND THEN A FINE 7,000-TON STEAMER FULL
OF COAL

"In the meantime the question of coal supply was getting troublesome. Our faithful *Markomannia* was empty. We still had with us the other prize, *Pontoporros*, which was filled with Indian coal. The Indian coal, however, makes very heavy smoke clouds and deposits a great amount of soot in the boilers, so that our followers were not very pleased with our smoking them up. The question of better coal was decided, however, by the English Admiralty in a very useful and anticipatory manner; for, the very next day they sent us a fine 7,000-ton steamer, full of the best English-Welsh coal, bound for Hong Kong, but diverted for uses other than their own. With this we were well supplied with the best coal and our cares for a further supply of that commodity were put off for some future day. The captain of our latest collier did not hesitate to accept duty in the German service, and whistling 'Rule Britannia,' he thenceforth conducted himself aboard ship in a fair and honorable manner, the operation of the collier of course being supervised by one of our officers and a prize crew.

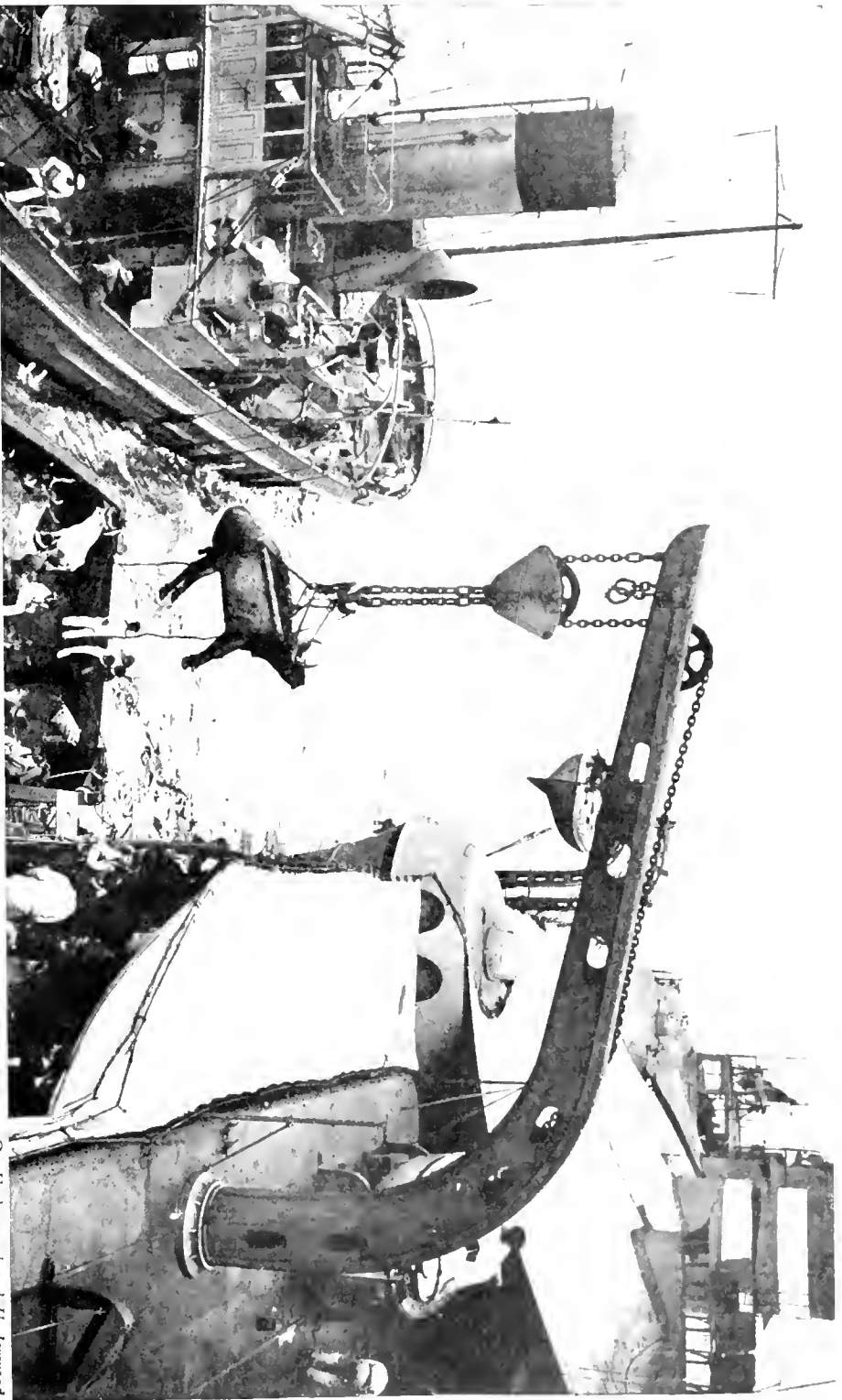
"Meantime it became clear to even the English Government that the *Emden* had not as yet been wholly destroyed. Therefore, they again gave more orders to stop all trade. There was nothing for us to gain by remaining in that neighborhood. The captain, therefore, decided that during this pause we would devote some attention to the *Emden*, which had been at sea for such a long time. It was especially necessary to scrape the long grass off the ship's bottom. And so we started south.

ENEMY SHIPS ON THE EMDEN'S TRAIL

"We knew that sixteen enemy vessels, consisting of English, French, Russian, and

Japanese, were on our trail. Information in regard to their positions or their names was denied us. But it made little difference, as the *Emden* was the smallest and least powerful of the cruisers in the Eastern Asiatic. Any opponent whom we might meet would be more powerful. It was clear to everybody on board that the *Emden* could not continue her rôle much longer. Sufficient hounds will surely kill the rabbit. Even in case of meeting an enemy cruiser that was not much too powerful for us, we must still suffer such damage and such a large loss in personnel in the fight, that we would have to leave our scene of operations. There was not a single harbor where we could go for repairs. Above all, it would be impossible to replace the losses in personnel. The captain had taken this view at the beginning of our operations and therefore decided that it was the *Emden's* duty to inflict as much damage as possible before she, sooner or later, came to grief.

"We knew by means of the radio signals that our enemies were all around us, and often close by. Although we could not decipher the messages, which were in secret codes, still we could estimate by the strength of the signals how far away the sending ship was. However, we did not derive much advantage from this as our enemies were frequently on all sides of us. Instead of slipping by them we might possibly run right into them. The English have frequently said that the *Emden* eluded them so long because of her high speed. That is not correct. Even apart from the fact that her bottom had grown so foul as to make high speed impossible, the *Emden* still could not make more than eleven knots. The colliers, that were not any faster than that, had to be convoyed. Again, there was no need of higher speed. When going at eleven knots we might miss an enemy, while at twenty knots we might have walked right into the same enemy's arms. The radio messages received gave us a hint, luckily, as to which nation the ship belonged. The English sent differently than the French, and these differed from the Japanese, and these again sent differently than the Russians, because the last mentioned, when they could signal at all, did so very poorly. . . .



© Underwood and Underwood.

A French Warship Taking On Her Beef Supply

Early in the war ships bound for Europe with cattle from the Argentine and from Australia had to run the gauntlet of several German raiders at large in the Atlantic.

DIVIDING THE LOOT ON THE SEA-RAIDER

"An unusual celebration always accompanied the business of 'dividing the loot.' From the captured steamers we took, always justly, everything that could be used aboard the *Emden*, especially edibles. And so a high mountain of provisions always piled up in its designated place on the quarterdeck. Sausages and hams hung suspended from the engine-room skylight. Mountains of chocolate and confections, bottles marked 'Claret' and 'Cognac,' with three stars, ornamented the waterways. Live-stock was placed in its proper pen, accompanied by much grunting, squeaking, bleating, cackling, or quacking. The steward and his men made up a list. When all was ready the business of dividing was begun. The men, standing around in a large circle, smoking and chattering, had to spend a good deal of time in storing the allotted tasty-bits up forward after the dividing had finished.

"In order to keep pace with the constant supply of provisions special meals were served. Chocolate or bonbons were served with coffee. Over 250,000 cigarettes were consumed by the smokers, and each evening, after the issue of 'smokes,' the deck seemed to be alive with hundreds of fire-flies. English flour, of which we received great quantities, gave the bakers all sorts of work. Excellent bread was made. Because of the bountiful supply of foodstuffs, it became necessary for the officers to pay especial attention in guarding against overfeeding, instead of underfeeding. . . .

"The health of the men aboard the *Emden* was excellent. From the time we left Tsingtau until the final battle, we had not one single case of sickness. In the afternoons the ship's band played for quite a long time. The men sat around comfortably on the deck, forming a circle around the band, some dancing, smoking, or joining in with song. Usually in the evenings after dark, a glee club of good and strong singers would gather and render all the 'possible' and 'impossible' songs.

"The 'possible' songs were usually our beautiful German national songs, which were rendered excellently. The 'impossible' songs were often composed as the singer went along. These usually consisted in trying to bring

out clearly some idea or other; but rhyme and rhythm were neglected. The concluding air was always 'The Watch on the Rhine,' in which all hands who happened to be on deck always joined.

II

THE *EMDEN*'S DARING DASH INTO PENANG HARBOR

MERCHANTMEN again failed to come, and as the *Emden* had just finished overhauling, we had to plan something else to fill in the present pause. After much reflection, the captain decided that our enemies from Colombo and Singapore must have a rendezvous where they could coal, provision, and rest their men. The most likely advance base seemed to be the harbor of Penang. According to the press reports we concluded that the French armored cruisers *Montcalm* and *Dupleix*, especially, would frequent this place. These or any other ships would, said the captain, be attacked in their own harbor.

"The night of October 27-28 found the *Emden* before Penang, heading in toward the harbor at high speed. The captain wished to enter with the first gray streaks of daylight. Navigating the narrow harbor entrance by night is too dangerous. Also, early morning seems to be the time of soundest sleep, and a surprise attack at that hour promised the best hope of success. At the proper time, all hands on the *Emden* were aroused. The ship was absolutely 'cleared for action;' that means, she was made ready in all respects for a battle. The men were served a good, warm breakfast. Clean linen and clean clothes were donned in order to avoid chances of infecting any wounds.

"Totally darkened, steaming without making any smoke, each man at his station, the ship approached the enemy harbor. It was shortly before sunrise. The night was dark. But, in low latitudes, the rising of the sun means immediate and full daylight. Several small, harmless fishing vessels were passed close-to in the darkness of the night near the harbor and only the watchfulness of the officer of the deck, who turned out of his course, prevented their being run down.

(As the *Emden* approached the harbor, the presence of enemy warships was suspected, so a fourth smoke-pipe was set up as a ruse.)

"As our ship arrived off the inner reefs of Penang, the first faint streaks of daylight began to show over the dark mountains ashore. We had arrived at exactly the proper time. In the short prevailing twilight we could see a large number of ships in the

"Soon we saw three white lights, equal distances apart, in the midst of the darkened, black mass. Our first thoughts were: these are the stern lights of three destroyers moored alongside each other. Soon we discovered, however, that this assumption was not correct. The ship's hull, now coming into plain sight, was much too large for a destroyer. The enemy ship was swinging to the tide

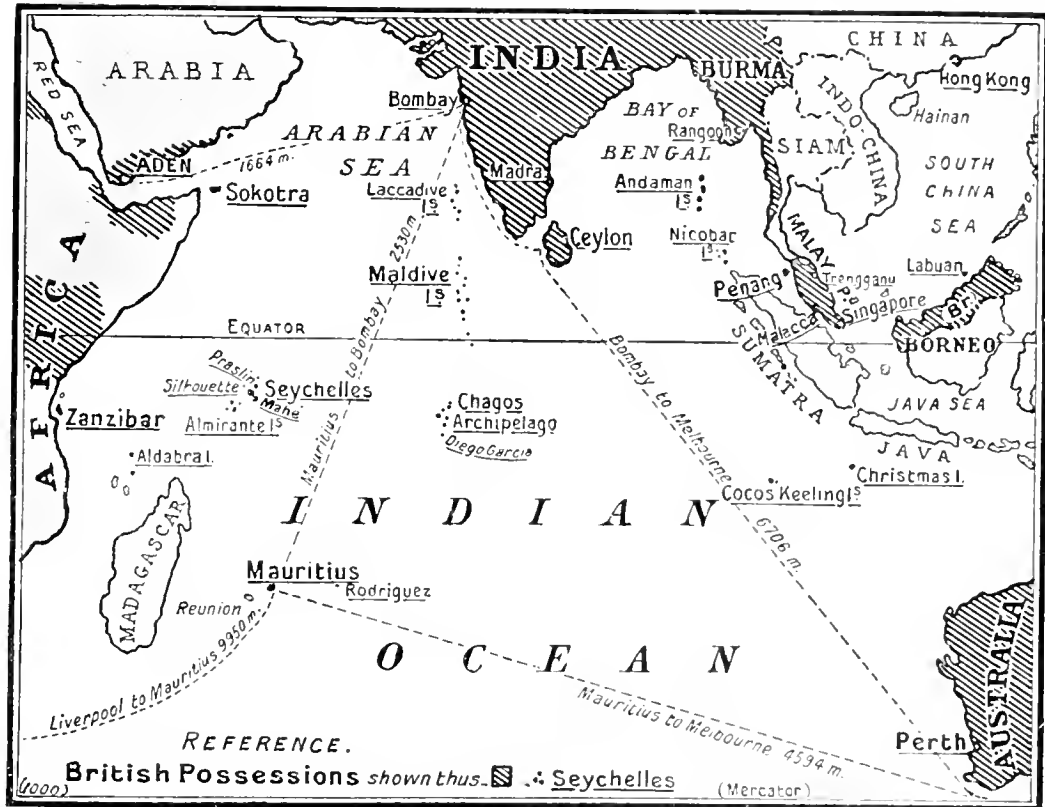


Chart of the Indian Ocean

Where the German raider *Emden* played havoc with Allied shipping, capturing or destroying 24 merchant vessels.

harbor. To all appearances, only merchantmen. No matter how hard we strained our eyes we could see nothing that resembled a man-of-war. We had already begun to think that we had made a failure of it, when suddenly, in the middle of the undarkened merchant ships, we saw something that was both dark and darkened. All eyes for a man-of-war. After a few minutes we were close enough aboard to make certain that it was some sort of warship.

with her stern toward us, so that unfortunately she did not make a silhouette. Not until the *Emden* had passed within about 200 meters from her stern, the enemy being abeam of us, could we definitely identify the vessel as the *Zemitchug*. Peace and quiet reigned on her. We had arrived so close aboard that we could distinctly recognize the Russian cruiser in the early gray of morning. We could not see the officer of the deck, nor the lookouts, nor even a signal watch.

A RUSSIAN CRUISER ATTACKED AND SUNK

"At a distance of 200 meters our first torpedo flew out of the starboard broadside tube, and at the same time our broadside guns opened up into the forecabin of the *Zemtchug* where the crew was asleep. The torpedo hit the enemy cruiser in the stern. One could plainly see the tremor that ran through the ship when she was struck. The stern was lifted about a quarter to a half meter out of the water and then the ship immediately began to settle slowly by the stern. The Russians now began showing signs of life. The doors, leading from the officers' rooms on deck, were torn from their hinges. Many officers came running but seemed to know their way to their battle stations very imperfectly. Without tarrying very long to consider, they hurried aft to the flagstaff and hopped overboard. A long row of sailors followed suit. Evidently these were their servant-boys, who follow their masters through thick and thin.

"In the meantime our guns carried on a rapid fire, at point blank range, into the *Zemtchug*. The *Emden* steamed past the enemy cruiser at very slow speed at a distance of 400 meters. The broadsides continued raining shells into her. The forepart of the ship was riddled in a few minutes. A fierce fire was eating up the forecabin. One could look clear through the ship through the large holes in her sides. One after another the projectiles kept on hitting. When they hit you could see a sharp, pale flash. Then, after a few seconds, as if flaming hoops were whirling around the spot where it hit, it reached the inside of the ship and then exploded, shooting the smoke out through the holes in the side meters in size. I did not see a single man escape from the forward part of the *Zemtchug*.

"Meantime the *Emden* was being fired on from three sides. Where the shells came from we did not know. We merely heard the whistling of the shells and then saw them strike the merchantmen that lay all around us. Even the *Zemtchug* woke up and opened fire. As her guns were larger than ours, a hit on us could have resulted disastrously. Even though the *Emden* might not be put out of the fight, still she could re-

ceive such damage that, not having a means of making repairs, her activities would have been considerably curtailed. The captain, therefore, ordered a second torpedo to be fired.

"The *Emden* having passed the *Zemtchug*, was turned around to port by means of her engines, and then started again to pass by her enemy. The second torpedo left the tube at 400 meters range. It had become so light that we could clearly see the air-bubble trail of this shot. After a few seconds there followed a powerful detonation in the neighborhood of the navigating bridge of the Russian cruiser. A giant, black smoke cloud, mixed with gray smoke, white steam, and spray, rose to a height of about 150 meters. Parts of the ship were torn off and flew around in the air. We could see the cruiser break in half. Bow and stern went under. Then the explosion cloud covered everything over, and, after it had cleared away, about ten to fifteen seconds later, there remained nothing more to be seen of the cruiser except the truck of her mast.

"The water where the ship sank was filled with floating wreckage and swimming men. The *Emden* did not have to bother about the swimmers. There were many fishing boats in this neighborhood who could readily rescue all the men.

TRICKS OF THE MORNING MIRAGE

"Soon we saw the French gunboat *D'Iberville* lying at anchor, hidden among the merchant vessels. Evidently that was one of the places from which we were fired on. The captain had just given the order to turn to port in order to pass the wreck of the *Zemtchug* and head for the *D'Iberville*, when the lookouts reported an enemy destroyer standing in. We could not permit her to attack us in the narrow confines of the harbor. It was impossible to maneuver in here so as to avoid a torpedo shot. Therefore the captain turned toward the destroyer at full speed in order to engage her in the outer and larger part of the harbor. We could plainly see the craft heading straight for us. The high, narrow bow, the low, broad smokepipes behind, coming at us at high speed. She seemed to be a typical English destroyer of a large type.

"At 4,000 meters we opened fire on her. High splashes where our shells hit arose all around and close aboard her. Then the vessel turned hard to starboard. It became evident that she was a fairly large English government steamer. The mirage, that is especially strong just at sunrise, had so distorted the appearance of the ship that she seemed to be exactly like a destroyer. We ceased firing immediately.

"On coming about in order to attack the *D'Iberville* once more, it was reported that a large merchantman was standing in. Even at a considerable distance we could make her out to be a merchant vessel. The captain then decided to capture her next. The *D'Iberville* could not escape us anyway. Our cutter was quickly lowered. The steamer received the usual signal, 'Stop, we are sending a boat!' But hardly had our cutter gone alongside the steamer when we again saw a warship heading in from sea. Therefore we recalled and hoisted the cutter, and headed for our new opponent.

THIS TIME A FRENCH DESTROYER

"The mirage this morning seemed to be exceptional. The form of the oncoming ship changed every second. At first she appeared to be a large black ship, with smokepipes fore and aft. Without doubt, a man-of-war. Then she suddenly seemed to shrink. Half of the smokepipes disappeared, and she then appeared to be a small gray merchantman with black rings around her smokepipes. A few minutes later she changed her form once more. She had become very small, very black, and with two smokepipes. Therefore, we finally decided that she was a warship of some sort, probably a French destroyer. Now, up and at her!

"The *Emden* at this time flew no flag. Neither did the approaching vessel. When about 6,000 meters away the on-comer hoisted the tri-color. So, now a Frenchman! She came toward us uncertainly and seemed throughout to fail to grasp who we were. What caused her to act like this is beyond me. She certainly must have heard the firing of the guns and the detonations of the torpedoes, and after that she might at least have expected to see a cruiser standing out

of the harbor. In spite of that, she held her course, passing us. When the range became 4,000 meters we hoisted our battleflags. The *Emden* turned slightly to port, showed her broadside and the first salvo was on its way toward her.

"And now the French ship knew with whom she had to deal. She turned hard to port, put on full speed and attempted to escape. Too late! The third salvo landed five hits on her quarterdeck. An explosion, evidently a magazine, a large cloud of black coal dust and white steam covered the entire after part of the ship. In spite of the evident stupidity of the French ship, we must give her credit for manning her battery very promptly. Two torpedoes were launched at the *Emden*, while the bow gun opened fire on us. The torpedoes did not reach their mark, as the *Emden* was beyond torpedo range. They came up about 900 meters off our starboard beam. The bow gun fired only a very few shots before it was smothered under a hail of shell from our guns. Mast, smokepipe, forward tower, superstructure, ventilators, and all were knocked overboard. In a very few minutes she sank. She was the French destroyer *Mousquet*.

PICKING UP THE SURVIVORS

"The captain stopped at the place where the ship had sunk. Both cutters were lowered and the live swimmers were picked up. Many of these floated about, some holding on to wooden wreckage, others, with lifebelts on, strung out at great distances apart. This showed that the first men to jump overboard must have done so at the very beginning of the fight. In the *Emden's* cutters were the doctor and such first-aid material as could hastily be collected. As our cutters approached the swimming Frenchmen they did the most remarkable thing, that is, they tried to swim away from the rescuing boats. The beach was so far away that it was impossible for them to swim that great distance. The reason for their fleeing from our boats came to light later on. We picked up thirty-three Frenchmen, some of them wounded, also one wounded officer. Thanks to the fact that we had our doctor ready to go along in the cutters, we managed to have

two-thirds of the wounded all bandaged and splints adjusted ready to be hoisted aboard in hammocks by the time the boats returned alongside.

"Meanwhile another French torpedo boat was seen to be standing out of the harbor and heading for us. It was high time for the *Emden* to get to sea. It seemed certain that other French and English men-of-war must be in the neighborhood. It was impossible for the unarmored *Emden* to successfully engage in a battle in broad daylight with more powerful warships. Therefore

"When we asked the Frenchmen why they swam away from our rescuing cutters they gave this answer: 'In our newspapers we read that the Germans massacre all their prisoners. We, therefore, preferred drowning to being murdered. The officers also told us the same things which we had read in the newspapers.

"On further questioning, when we asked how it happened that on the previous night they allowed the *Emden* to pass on into the harbor, they answered that they had seen the *Emden*. But, as we had four smokepipes, they thought we were the English cruiser



The Raider *Emden* Ashore After the Battle

Australians from the *Sydney* are approaching in a boat to rescue survivors. (See page 189.)

we proceeded to sea at high speed on a westerly course. The French destroyer followed us for some time, but finally disappeared into the rainbow and was never seen again.

"We did the best we could aboard ship to attend to the wounded and captured Frenchmen. The wounded were given medical attention in the sick bay. A large, firm, wood and canvas house was built up on the starboard side of the main deck, next the engine-room skylight, for the accommodation of the unwounded.

"... Although our men had few clothes left, they voluntarily and willingly gave clothes to the prisoners, most of whom had arrived on board with very little on.

Yarmouth and therefore did not hinder us. Most undoubtedly the white light that we sighted during the night off Penang must have been this French destroyer. They explained that their captain had both legs shot off by one of our shells. He could have been saved, but he lashed himself to the bridge in order to sink with his ship, because he did not care to live and face the shame of having had a part of his crew jump overboard at the very beginning of the fight. Hats off to an officer of this caliber!

"Among the wounded there were three serious cases. Recovery was impossible. One died the first evening, and the two others the next day.

A BURIAL SERVICE AT SEA

"The first dead man was, according to the customs of the sea, sewed up in canvas and weighted, and lay in state on the starboard side of the quarterdeck. The corpse was covered with the French war flag. A sentry stood watch on this post throughout the night. The next morning the dead was buried from the starboard gangway. The ship was stopped during the ceremony. One division of the *Emden's* seamen, in parade uniform, took part in the ceremonies. All the unwounded Frenchmen also took part. A guard of honor, with rifles and commanded by an officer, attended. All the German officers, wearing service uniforms and their medals, were present. The captain spoke a sermon in French. Among other things he said that the departed had died with honor in the service of his country and that the enemy would not deny him any of the honorable ceremony which he deserved. Then followed a prayer, read from our Catholic prayer book, as the Frenchman was of that religion. As the corpse, covered with the French flag, disappeared into the deep, the guard of honor presented arms and then fired three volleys over the grave. The officers stood, at the salute, alongside the gangway. The same ceremonies were repeated the next day when the other two were buried.

"After a few days we were able to transfer the Frenchmen to an English steamer whose neutral cargo we could not destroy. When they were told to prepare to leave the ship, the two eldest petty officers came to me with the request to see the captain. They gave the captain their thanks and the thanks of their comrades for the honorable and humane treatment and reception which they had received on board. They now knew that what their newspapers had said about the Germans were lies and they would do all they could when they reached home to spread the truth. Both these petty officers said the same to me.

THE *EMDEN* DID NOT FLY THE ENGLISH
FLAG AT PENANG

"The most ridiculous reports were made by the English in regard to the Penang battle. They complained that the *Emden* had ap-

proached the harbor under the English flag and for this reason was not recognized. They also said that the *Emden* had gone into the harbor by the southern entrance and had left by the northern entrance. These reports are groundless and untrue. In the first place the *Emden* never flew the English flag, and further it was night when the *Emden* came in. The carrying of a flag therefore would have served no purpose. The southern entrance to Penang is so shallow that the *Emden* could not possibly have entered that way. The only thing in the English reports worth attention is the praise to our captain, referring to our picking up the Frenchmen after the *Mousquet* sank.

"Here again was shown the knightly conduct of the *Emden's* captain, the conduct which he repeatedly exhibited in his meteoric career during the war. As the French torpedo-boats might have dashed out any time, every second was precious to him. Without considering for a minute his own danger, he stopped and sent out boats to pick up the remainder of the living of the *Mousquet* before he again proceeded on his way. As the report reads, 'He played the game.'

"Further, I will permit myself to quote the following words: 'And so ended this engagement that will forever remain as an historical example of the possibility of two ships, approximately of the same power, engaging in battle in broad daylight at the shortest possible range, without both of them being totally destroyed. A case such as that has always been considered by all naval authorities as either impossible or a case of suicide.'

"The authorities evidently referred to men other than those under the command of our captain. . . ."

III

LYING IN WAIT OFF THE COAST
OF SUMATRA

AFTER leaving Penang the captain decided to cruise to the southward. We imagined that all the trading ships in the Bay of Bengal would be held up in their harbors again for a considerable time. *Emden* herself had given definite notice of her pres-

ence in this region when she sank the *Zemtschug* and the *Mousquet*. Also we had to assume that the hunt for the *Emden* in the Bay of Bengal would now be more thorough than heretofore. Therefore it seemed that the Straits of Sunda gave more promise of success in capturing merchantmen. The cargo vessels coming from Australia hardly touched the waters around India; instead, when coming from the Straits of Sunda or from West Australia they proceeded across the Indian Ocean straight toward Sokotra and then into the Red Sea.

"The next thing was to find our collier *Buresk*. We left her outside of Penang. Due to her slow speed of barely 11 knots, she could not follow us during the engagement.

"The *Buresk* was found at her previously appointed position. The news of the fight created the greatest excitement. And now, at the customary speed of 11 knots, we proceeded south. Soon we sighted the islands lying off the western coast of Sumatra. As the main ships' route lay between Sumatra and the islands, the captain decided to remain in these straits. It was not so rough behind the islands as in the open sea. We could coal more readily. Further, we had reason to believe that the first warships to search these quiet waters would be English and Japanese torpedo-boat destroyers. It was not impossible that we might catch one or more of these. . . .

"The *Emden* cruised about in the waters of Sunda Straits for some time. But nothing was sighted. Evidently, even in this region, all shipping had been entirely held up. Ordinarily, shipping is very active in the Sunda Straits.

"For two months our ship had been cruising around among enemies. I have previously said that everybody on board was now certain that the *Emden's* operations could not continue much longer. Conditions were rapidly becoming worse. When we first entered the Bay of Bengal we knew that our enemies were not ready to thoroughly search for us and that there were few warships in the Indian Ocean. Most of their ships were after our armored cruisers in the Pacific Ocean. Soon, however, we read the reports in the newspapers and secured other information which showed us that a great number of more

powerful ships were on our trail. Some of this information we received from the crews of the captured steamers. . . .

"All in all, the *Emden* was being pursued most thoroughly. The moment when her game would be played out was not far distant. The spirit of the entire ship, however, was for keeping on going. If one should come he would soon see with whom he had to reckon.

THE LANDING ON KEELING ISLAND

"As no more ships were sighted in the Straits of Sunda, the captain decided to destroy the radio and cable station on Keeling Island. The cable connection between Australia and the home country had long since been destroyed by the other vessels of our squadron. Keeling was the last direct connection between Australia and England. Should this be destroyed, the only other connection would be via the neutral Dutch cable in the East Indies. We therefore assumed that England had made some preparation to protect their last station. It would have been an easy matter to transport several hundred men to Keeling and prevent a landing by the *Emden's* landing force. . . .

"As we had to reckon on resistance, we made all possible preparations in order that the landing force would be as powerful as we could make it. The four machine guns were taken along. A force of 50 men was equipped. In addition to the machine guns, the offensive equipment consisted of 29 rifles and 24 revolvers. It was impossible for the *Emden*, with her small complement, to land more than 50 men. We had previously, out of our own crew, manned the prizes *Pontoporros*, *Exford* and *Buresk*, and several men were also on the *Markomannia*.

"During the night of November 8-9, 1914, the *Emden* and her tender *Buresk* were 50 sea miles west of Keeling. The collier *Exford* had been sent to another rendezvous in the ocean. It was possible that an English cruiser might be found at anchor in the harbor of Keeling. Then there was the danger of having the *Buresk* sighted and captured, while the *Emden*, returning after the completion of her task, would have to run the risk of escaping from a stronger cruiser. If she escaped

she would then find her other collier at some point out of the sight of the enemy.

"*Buresk* received orders during the night to remain 50 sea miles west of the island and not to come to Keeling unless she received orders by radio. The captain intended, in case everything went off smoothly and after the destruction of the station, to coal in Keeling Harbor.

"At sunrise on the morning of November 9th the *Emden* was close to the entrance to Port Refuge, the anchorage of the island of Keeling. The difficult channel through the reefs was found. *Emden* embarked in the boats and started for the landing. It was 6:30 a. m. The landing was made without resistance.

THE *EMDEN* ATTACKED BY THE *SYDNEY*

"After about two hours the work ashore was completed. The landing force was making ready to reëmbark when the *Emden* sent a signal by search-light, 'Expedite work!' Shortly thereafter the *Emden* blew her siren. That meant danger. The landing force saw the *Emden* quickly hoist her anchor, turn around and leave the harbor. The attempt to cut across the reefs and thereby catch up with the ship failed. Then in a few minutes *Emden* hoisted her battleflags and opened fire on an opponent that could not be seen from the boats. His presence, however, was denoted by the high splashes caused by shells striking close aboard the *Emden*.

"Unable to be of the slightest assistance to their ship, the landing force was obliged to remain ashore gnashing their teeth and watching the unequal fight that was now in progress.

"The *Emden's vis-à-vis* was the English-Australian cruiser *Sydney*. She being one and a half times larger, five years younger, equipped with side-armor, and carrying a battery with the same number of guns per broadside as the *Emden*, but each gun one and a half times larger, and having the superior speed, the result of this engagement was never in doubt. The inevitable and fatal hour had struck.

"Soon the ships engaged in a running fight at a range of about four to five thousand meters. Broadside of 'iron-greetings' were exchanged. At first it seemed as if the enemy had suffered heavily. The *Emden's* salvos from the very beginning landed in the forward part of the enemy's ship. The gunnery of the English was not of a very superior order. Although our ship had been under fire for a considerable time, not one hit had been made on her.

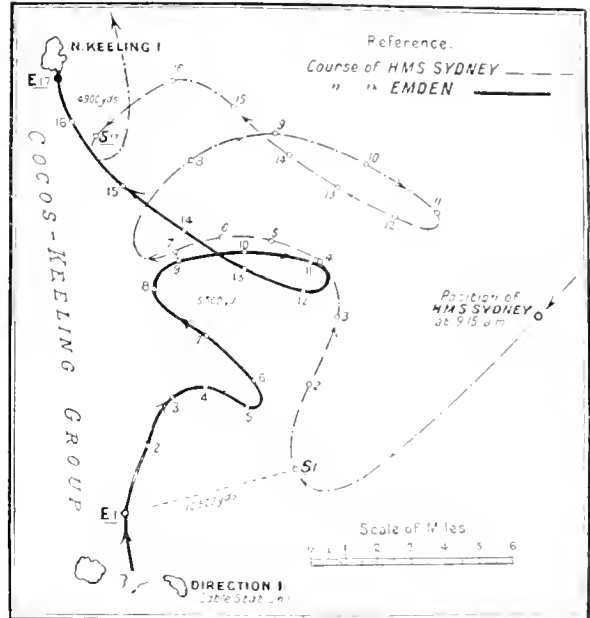


Diagram of the Running Fight Between the *Sydney* and the *Emden*, November 9, 1914

THE *EMDEN* ON FIRE

"Then a heavy salvo landed on the *Emden's* stern. The heavy shells easily penetrated the unarmored sides of the *Emden*, causing extraordinary damage. Fire broke out under the poop. For about 15 minutes flames shot 20 to 25 meters in the air out of the after end of the ship. The gray clouds were streaked with white steam, indicating that a steam pipe on the starboard side must have been pierced. These serious injuries did not, however, prevent the *Emden* from continuing her energetic attack on the enemy. She

turned with full rudder and went after him.

"The stream of projectiles from her bow guns never ceased. A few minutes after the *Emden* turned toward him the enemy cruiser also turned away to starboard and drew away from our ship. As we had meanwhile noticed that he had been hit several times, we, on shore, silently hoped that he had received some fatal injuries. Evidently this was not the case. He headed away at full speed, but shortly after he came about again. No doubt



Captain John C. T. Glossop of the *Sydney*

he was trying to increase the range in order to use his more powerful guns and still keep outside the effective range of the *Emden's* lighter battery.

"Meanwhile the *Emden* received some more serious injuries. While turning toward the enemy, a shell knocked the forward smoke-pipe down. This huge, bulky mass lay athwart the forecastle. Almost at the same time another shell carried the foremast by the board. When I saw this I knew that at least one of my comrades lived no more—the control officer in the foretop.

"The fire aboard the *Emden* continued to rage, seeming gradually to suffocate them all.

Instead of flames we now saw clouds of smoke evidently caused by their attempting to put the fire out. Running along side by side, firing heavily all the time, the two engaged cruisers disappeared over the horizon.

"The fight started shortly after 8:30 a. m. The *Emden's* landing force now had to prepare an old schooner lying in the harbor, *Ayesha* by name, for a trip to sea in order to be able to leave the island in case the *Emden* did not return. As the day wore on we could, on several occasions, see the *Emden* near the horizon, but not near enough to be able to make out anything. Unfortunately, we could see from time to time large, black smoke-clouds, caused by the Indian or Australian coal which the *Sydney* was using. The landing force, therefore, had to assume that the fight was still going on.

THE LAST OF THE *EMDEN*

"Shortly before dark that evening both vessels again approached. They still continued to fire. The last of the fight that the landing force saw was shortly before sunset. The *Emden* was then steering at slow speed to the eastward. The ship was almost entirely under the horizon. Only one smoke-pipe and the mainmast remained standing, but they gave us the indications in regard to her course and speed.

"The limit of visibility, that is, the distance from Keeling to the horizon, was about eight to ten sea miles. It was, therefore, certain that shortly before sunset the *Emden* not only remained afloat, but was not more than eight to ten sea miles distant from South Keeling. The *Sydney* was nearer the island. We could see her masts, smoke-pipes, superstructure and upper deck. Both vessels still fired, but the *Emden's* fire was intermittent and not very heavy. Either her ammunition was exhausted, for she had expended a considerable amount during the Madras bombardment and the Penang battle, or a majority of her guns were put out of action.

"At sunset the *Sydney* broke off the engagement and steered in a northwesterly direction. *Emden* was heading easterly. Gradually the ships drew outside of the range of their guns. The firing ceased. The sun sets. It is getting dark. Like a shroud, night

draws over both ships. The landing force leaves Keeling on the *Iyasha* in order to hunt the *Emden*.

"And so it happened that a ship, completely overpowered by the enemy, managed to continue the fighting for about ten hours. The combined advantages of armor, speed and armament in such an encounter need not be

The rocky reefs of North Keeling became her grave. But just as long as the monsoons whisper through the high-crowned palms of this now world-famous island, joining the white, foaming surf of the Indian Ocean in singing the death song of the *Emden*, that long will people speak and sing of 'The Flying Dutchman,' the little German ship that, in



When the *Emden* Sank

Official photograph showing the first boat load of captured sailors from the daring German sea raider.

explained to those who are acquainted with naval affairs.

"Considering these factors, it becomes very evident that the *Emden* fought against heavy odds. Unarmored, decidedly smaller, handicapped by an inferior battery and slower speed than her armored opponent, she still managed to battle for half of a day until darkness put an end to the engagement.

"During the night the landing-force failed to pick up the *Emden*. Not until three weeks later, on their arrival at Penang, did they learn of the fate of their ship.

"The song is ended. *Emden* is no more.

the great World's War of 1914, cruised in great circles around in the open ocean, and, for months at a time, put the fear of God into the enemy."

IV

HOW THE *EMDEN* WAS DESTROYED

THE honor of discovering and then engaging the *Emden* fell to the Australian cruiser *Sydney*, Capt. H. G. G. G. Following is the official report of the action by the victor:

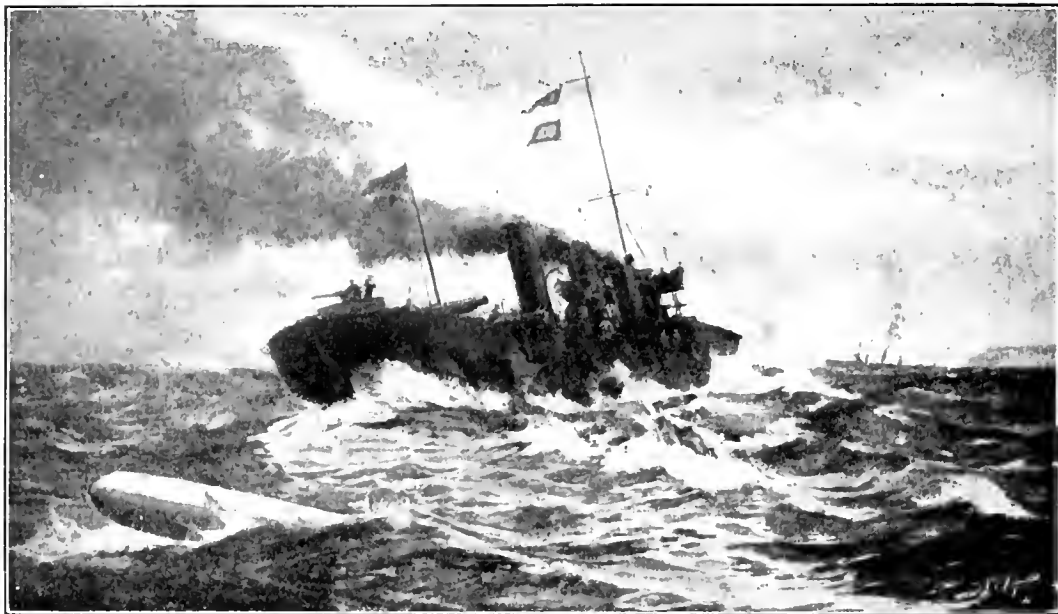
H. M. A. S. SYDNEY, AT COLOMBO

THE COLLIER BURESK ALSO SUNK

November 15, 1914.

Sir.—I have the honor to report that while on escort duty with the convoy under the charge of Captain Silver, H. M. A. S. *Melbourne*, at 6.30 a. m., on Monday, November 9, a wireless message from Cocos was heard reporting that a foreign warship was off the entrance. I was ordered to raise steam for full speed at 7 a. m., and proceeded thither. I worked up to 20 knots, and at 9.15 a. m. sighted land ahead and almost immediately the smoke of a

Although I had guns on this merchant ship at odd times during the action I had not fired, and as she was making off fast, I pursued and overtook her at 12.10, firing a gun across her bows, and hoisting international code signal to stop, which she did. I sent an armed boat and found her to be the S. S. *Buresk*, a captured British collier, with 18 Chinese crew, 1 English steward, 1 Norwegian cook and a German prize crew of 3 officers, 1 warrant officer and 12 men. The ship, unfortunately, was sinking, the



A Narrow Escape

A destroyer dodging a torpedo by putting her helm over and changing her course the instant the ripple caused by the advancing projectile was seen.

ship which proved to be H. I. G. M. S. *Emden*, coming out toward me at a great speed. At 9.40 a. m. fire was opened, she firing the first shot. I kept my distance as much as possible to obtain the advantage of my guns. Her fire was very accurate and rapid to begin with, but seemed to slacken very quickly, all casualties occurring in this ship almost immediately. First the foremost funnel of her went, secondly the foremast and she was badly on fire aft; then the second funnel went and lastly the third funnel, and I saw she was making for the beach on North Keeling Island, where she grounded at 11.20 a. m. I gave her two more broadsides and left her to pursue a merchant ship which had come up during the action.

Kingston knocked out and damaged to prevent repairing, so I took all on board, fired 4 shots into her, and returned to the *Emden*, passing men swimming in the water, for whom I left two boats I was towing from *Buresk*.

On arriving again off *Emden* she still had her colors up at mainmast head. I inquired by signal, international code, 'Will you surrender?' and received a reply in Morse 'What signal? No signal books.' I then made in Morse, 'Do you surrender?' and subsequently, 'Have you received my signal?' to neither of which did I get an answer. The German officers on board gave me to understand that the captain would never surrender, and therefore, though very reluctantly, I again fired at her at 4.30 p. m.,

THE VICTIMS OF THE GERMAN CRUISER *EMDEN*(From the *Proceedings of the U. S. Naval Institute*)

Date	Name	Voyage	Cargo	Value	Tonnage	Remarks
Aug. 3, 1914	Rjesan	Hong Kong to Vladivostok	Passenger Steamer	.....	3,122	Taken to Tsingtau. Converted into auxiliary cruiser under name of <i>Cormoran</i> . Later on interned at Guam.
Sept. 10, 1914	Pontoporros	.....	Coal	.....	4,049	Captured. Recaptured by English cruiser <i>Yarmouth</i> .
Sept. 10, 1914	Indus	Calcutta to England	General	\$ 690,000	3,393	Sunk
Sept. 11, 1914	Lovat	Calcutta to Bombay	Ballast	300,000	6,102	Sunk
Sept. 12, 1914	Cubinga	.....	.....	.....	4,657	Captured. Loaded with crews of other ships and then let go.
Sept. 13, 1914	Killin	Calcutta to Colombo	Coal	215,000	3,544	Sunk
Sept. 13, 1914	Diplomat	Calcutta to England	General	1,500,000	7,615	Sunk
Sept. 14, 1914	Trabboch	Negapatam to Calcutta	Ballast	100,000	4,014	Sunk
Sept. 14, 1914	Clan Matheson	.....	.....	190,000	4,775	Sunk
Sept. 25-30, 1914	King Lud	Alexandria to Calcutta	Ballast	300,000	3,650	Sunk
Sept. 25-30, 1914	Tymeric	Samarang to Falmouth	General	655,000	3,314	Sunk
Sept. 27-30, 1914	Foyle	From Sfax	Ballast	150,000	4,147	Sunk 315 miles off Colombo
Sept. 27-30, 1914	Riberia	Alexandria to Batavia	Ballast	150,000	4,147	Sunk 200 miles west of Colombo
*Sept. 30-9, 1914	Buresk	From Port Said	Coal	160,000	4,350	Captured. After defeat of <i>Emden</i> , <i>Buresk</i> sank by own crew before <i>Sydney</i> could capture her.
Sept. 30, 1914	Gryfedale	.....	.....	.....	4,437	Captured and released
Oct. 13-20, 1914	Clan Grant	Great Britain to Calcutta	General	640,000	3,948	Sunk
Oct. 16-20, 1914	Ben Mohr	Great Britain to Far East	General	815,000	4,806	Sunk
Oct. 16-20, 1914	Ponrabbel (Dredger)	Great Britain to Launceston	Ballast	145,000	473	Sunk
Oct. 18-20, 1914	Troilus	Yokohama to Great Britain	General	3,400,000	7,562	Sunk
Oct. 18-20, 1914	Chilkana	Great Britain to Calcutta	General	1,060,000	5,146	Sunk
Oct. 20, 1914	Exford	From Cardiff	Coal	275,000	4,542	Captured. Recaptured by <i>Empress of Japan</i> and sunk off Padang.
Oct. 20, 1914	St Egbert	.....	.....	.....	5,506	Captured. Loaded with crews of other ships and then let go.
Oct. 28, 1914	Zemling	At anchor in Penang	Russian Cruiser	.....	3,130	Sunk by two torpedoes and gun fire.
Oct. 28, 1914	Mousquet	Off Penang	French Destroyer	.....	298	Sunk by gun fire.

Markomania, *Emden's* tender, was sunk by English cruiser *Yarmouth*.*Buresk* sunk by own crew before *Sydney* could capture her on Nov. 9, 1914. Took three officers, one warrant officer, and 12 men, prisoners.A collier was sunk by the *Empress of Japan* off Padang. Probably *Exford*.

* Date uncertain.

ceasing at 4.35, as she showed white flags and hauled down her ensign by sending a man aloft.

I then left the *Emden* and returned and picked up the *Buresk's* two boats, rescuing two sailors (5.0 p. m.), who had been in the water all day. I returned and sent in one boat to *Emden*, manned by her own prize crew from *Buresk* and one officer, and stating I would return to their assistance next morning.

I lay on and off all night and communicated with Direction Island at 8.0 a. m., November 10, to find that the *Emden's* party, consisting of 3 officers and 40 men, 1 launch and 2 cutters, had seized and provisioned a 70-ton schooner (the *Ayesha*), having 4 Maxims with 2 belts to each. They left the previous night at six o'clock. The wireless station was entirely destroyed, 1 cable cut, 1 damaged, and 1 intact. I borrowed a doctor and two assistants and proceeded as fast as possible to *Emden's* assistance.

CONDITIONS ON BOARD INDESCRIBABLE

I sent an officer on board to see the captain, and in view of the large number of prisoners and wounded and lack of accommodation, etc., in this ship, and the absolute impossibility of leaving them where they were, he agreed that if I would receive his officers and men and all wounded, then as for such time as they remained in *Sydney* they would cause no interference with ship or fittings, and would be amenable to the ship's discipline. I, therefore, set to work at once to tranship them—a most difficult operation, the ship being on weather side of island and the send alongside very heavy. The conditions in the *Emden* were indescribable. I received the last from her at 5.0 p. m., then had to go round to the lee side to pick up 20 more men who had managed to get ashore from the ship.

Darkness came on before this could be accomplished, and the ship again stood off and

on all night, resuming operations at 5 a. m. on the 11th of November, a cutter's crew having to land with stretchers to bring wounded round to embarking point. A German officer, a doctor, died ashore the previous day. The ship in the meantime ran over to Direction Island to return their doctor and assistants, send cables, and was back again at 10 a. m., embarked the remainder of wounded, and proceeded for Colombo by 10.35 a. m. Wednesday, the 11th of November.

Total casualties in *Sydney*: Killed 3, severely wounded (since dead) 1, severely wounded 4, wounded 4, slightly wounded 4. In the *Emden* I can only approximately state the killed at 7 officers and 108 men from captain's state-

ment. I had on board 11 officers, 9 warrant officers, and 191 men, of whom 3 officers and 53 men were wounded, and of this number 1 officer and 3 men have since died of their wounds.

The damage to *Sydney's* hull and fittings was surprisingly small; in all about 10 hits seem to have been made. The engine and boiler rooms and funnels escaped entirely.

I have great pleasure in stating that the behavior of the ship's company was excellent in every way, and with such a large proportion of young hands and people under training it is all the more gratifying. I have the honor to be, Sir, your obedient Servant,

JOHN C. T. GLOSSOP, *Captain*.

THE SEQUEL TO THE *EMDEN*

How the Landing Party at Keeling Island Seized a Schooner and Made Their Way Safely Back After Many Adventures

I

IN the foregoing account of the *Emden* Lieutenant von Mücke tells how he was left on Keeling Island with his landing party when the *Emden* was suddenly called away to battle with the *Sydney*. The subsequent adventures of this landing party make a worthy sequel to the story of the *Emden*, and though the little schooner *Ayesha* would hardly be ranked as a sea-raider, nevertheless she played so important a part in the escape and return home of these stranded members of the *Emden's* crew that the *Emden* story could not be complete without a recital of their experiences.

The object of the landing party was, of course, the destruction of the wireless and cable station on the island. But the quick-witted operator recognized the *Emden* despite her extra dummy funnel as soon as she appeared, and issued the call that brought the *Sydney* to the scene. Even before Lieutenant von Mücke's boat grated on the beach orders were being filled out at the Admiralty offices in London for the repair of the cable station—that is, before the destruction had even begun! This work of wrecking the sta-

tion and cutting the cables von Mücke describes as follows:

"Without delay a pair of heavy axes were produced and in the next instant a shower of Morse keys, ink-wells, table legs, severed cable ends and similar wreckage flew about the room. They certainly obeyed orders to do a most thorough job. High and low, search was made for reserve instruments and such, and everything which appeared to belong to the station was destroyed. Among other things, a seismograph that had been installed on the island was also wrecked. Our men thought that it was a part of the telegraphic apparatus.

"The heaviest work was the hunting for and cutting of the submerged cables. A chart containing the position of the cables could not be found in the stations, but along the beach were several signs marked 'Cables.' Here must be the land-end of the cables. With the steam launch we searched with a pair of drags or grapnels that are ordinarily used in fishing for cables. The work was not easy as we had nothing but man-power to use and that in very cramped quarters and the cables were exceedingly heavy. It was impossible to lift them to the surface of the water, so my men, after the bight of the cable had been raised a bit, had to dive and secure tackles to them so that we could proceed with the work.

"After much labor we were finally able to raise the cable strands up to the boats. I was unwilling to use explosive bombs with which to cut the cables, as the *Emden* needed these to sink more merchant ships. We therefore had to cut the thick cables with crowbars, axes, chisels and other similar tools. After soul-wrecking efforts we succeeded in severing two cables and towing the dead ends to sea with the steamer. The third cable, in spite of an especially thorough search, was still undiscovered.

"A small, corrugated-iron house containing a mass of reserve parts and all sorts of reserve apparatus was blown up by a bomb and burned down, while the newspapers, books, Morse messages and so forth, were taken along."

THE EMDEN GIVES THE ALARM

Before the work could be completed the signal flew from the *Emden*, "Expedite the job"; and shortly afterwards the flying of battleflags and the opening of the guns told the watchers on shore that an enemy had been sighted. Without waiting for the landing party the *Emden* sped out to sea and the anxious watchers on the island saw the two vessels maneuver out of sight down the horizon. Von Mücke continues:

"The question now arose as to what disposition I should make of the landing force. Our ship had already received such severe punishment by the more powerful ship that it was next to impossible for her to emerge victorious and return to the island. She would probably have to arrange to slip into some harbor in order to make repairs, bury the dead and transport the wounded ashore. I could, however, safely assume that in a short time some English warship would proceed to Keeling to see what was happening to the radio and cable stations. The telegraphic communications were broken between the Australian ports and also between Batavia and Mauritius.

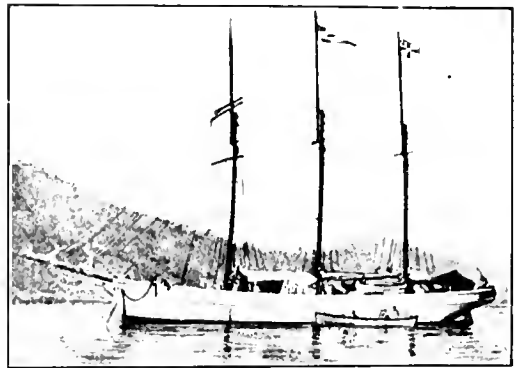
"We could, with our 4 machine guns and 20 rifles, repulse a landing force of Englishmen, but we were powerless against the gunfire which the English cruiser would pour on us. All in all, it seemed but a postponement of the inevitable surrender of a post whose loss was, without doubt, a foregone conclusion. Captivity in English hands was not to our taste.

"There still lay in the harbor the small, white schooner, fortunately not as yet blown up. It could and would help us out. I de-

cided to leave the island on it. The name was *Ayesha* and it had formerly made two or three trips each year to Batavia, carrying copra away and returning with provisions. Now, however, as steamships made regular calls here, the schooner lay in the harbor unrigged, out of service and rotting away.

SEIZURE OF THE *AYESHA*

"I went to her alone in the steam launch in order to look her over and determine her seaworthiness. The captain and one seaman were aboard. At first, in an offhand way, I asked him if he had any munitions aboard, as I did not wish him to guess the reason for my



The Schooner *Ayesha*

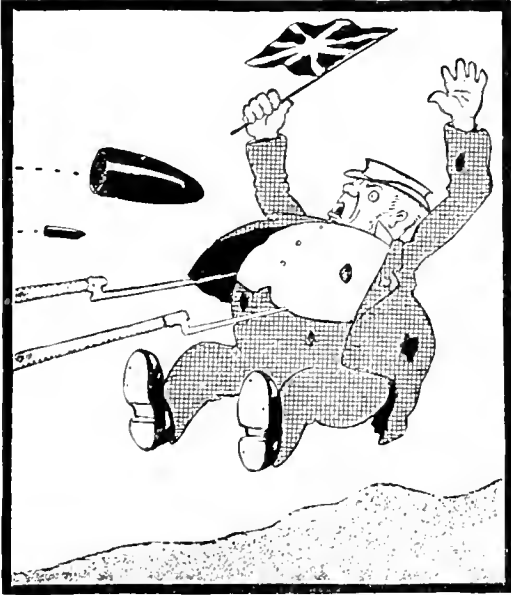
She was seized by sailors of the *Emden* who were abandoned on Keeling Island. The rest of their adventures reads like a work of fiction.

coming aboard. He denied having any, and while showing me casually about the ship, I concluded that she apparently was still seaworthy. Therefore I sent my officers and men to the *Ayesha* to prepare her for sea. And there was a lot to be done. All sails and rigging had been removed and stored and these had to be found and brought aboard.

"The next day we proceeded to inspect more minutely our new home. The *Ayesha* was a ship of 97 tons gross, as we discovered by reading a sign on one of the beams in the storeroom. She was about 30 meters long and approximately 7 to 8 meters beam. The ship was fitted with three masts: the two after ones, that is, main and mizzen, were schooner-rigged, while the fore carried two square sails. Evidently she had been manned by a crew of five seamen and the captain, while we now had 50 aboard. The men were quartered in the crew's space forward. But as the forecabin

could not accommodate more than six men, the remainder slept in the storeroom."

Crowded into this little schooner and with only a tiny map * of the eastern hemisphere for a chart, von Mücke's company set sail for the broad ocean. They had to depend on rain water for drinking purposes, and were reduced to smoking tea in place of tobacco. More than once they were in grave peril of foundering in the tropical storms that plagued



© Kladderadatsch, Berlin.

Britain's Enthusiasm for Peace

Asquith: "We will conclude peace only after the downfall of Prussian Militarism."

(This jibe at the then Prime Minister was made in the days when Germany was still clinging to the idea that "might makes right.")

them, but they arrived safely and in good spirits at the Dutch port of Padang on the west coast of Sumatra. There von Mücke had difficulties with the Dutch authorities, who wanted to intern the *Ayesha* as a prize, but he stoutly insisted that she was a regularly commissioned man-of-war of his Imperial Majesty and therefore entitled to go forth again. He carried his point and set forth from the shelter of neutral water to accomplish the desperate feat of making his way back to Germany.

* This map was discovered by von Mücke in an old commercial directory of India, among the effects seized on the *Ayesha*.

II

OUTWITTING THE ENGLISH

THERE had been several German steamers at Padang, and he had made arrangements for one of them to come out and meet him at a certain place in the ocean. Accordingly he cruised about for nearly three weeks looking anxiously for the ship to appear.

"Twice our hopes of an approaching steamer were blasted. Each time it was an English ship. One of these carried on so peculiarly and went through the most remarkable maneuvers at our approach, that we thought she must be working in conjunction with some auxiliary cruiser. Therefore we cleared ship for action. In order to give the steamer something to think about and to further our attempts at disguising ourselves as a harmless sailing ship, we made the signal: 'Please give us the longitude,' a signal that is more or less customary for a sailing ship to address to a steamer when they meet at sea. She gave us the required answer, but added the tormenting question: 'Who are you?' We had no identification flags and we did not wish to give the ship's signal as described in the ship's papers. We therefore took four very beautiful flags, secured them together, tied a knot in each of the two upper flags so that nobody could possibly read them and hoisted the signal, half hidden by a sail. So the steamer would think that we had answered her question and she merely could not make it out. About a half hour later the steamer disappeared. Her return signal was still flying, 'I can see your signal, but cannot make it out.' The second English steamer was so far away that she could hardly have seen us."

Finally, however, the *Choising*, a Lloyd ship, appeared. She was one of those at Padang, and had gone there originally with a load of coal for the *Emden*. As she was scarcely able to do better than four knots, she was not much of an ocean greyhound, but she was far more seaworthy than the little *Ayesha*. Accordingly the party transferred to the steamer and sank the schooner with due ceremony in mid-ocean. This took place on December 16 (1914). Reference to the map on page 179 will suggest the hazardous nature of this long voyage across seas sure to be traversed by enemy ships.

III

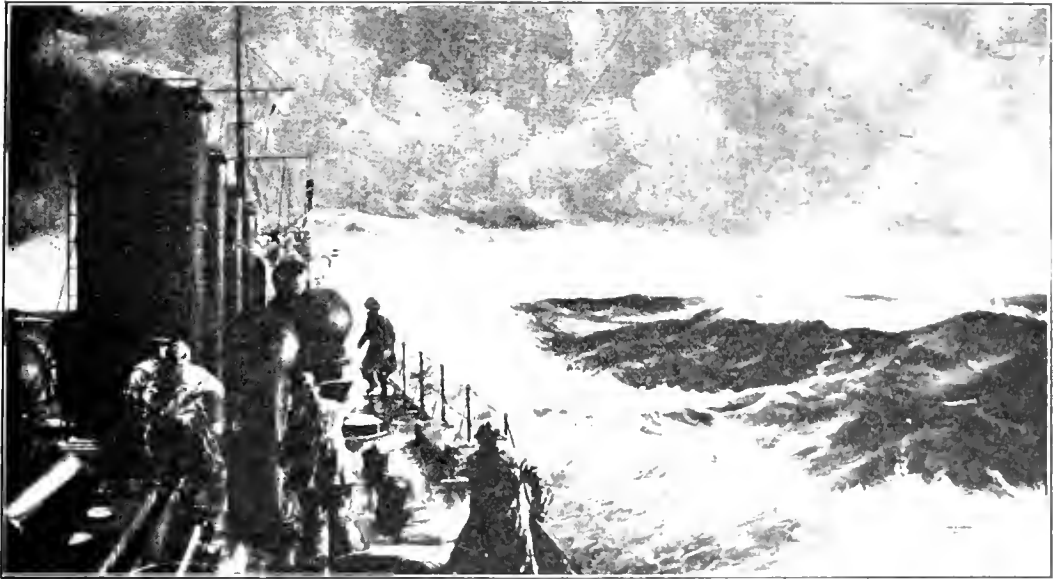
OVERLAND MARCH ACROSS THE ARABIAN DESERT

AS the newspapers brought by the *Choising* revealed the facts that Tsingtau had been taken, the *Königsberg* was trapped in the Rufgi river, and Turkey had entered the war on the side of the Central Powers, von Mücke decided that the only course to pursue was to head for Arabia, finding a way home if

the reefs of the Arabian coast in native boats till another landing could be made nearer Turkish communications. Accordingly two *zambuks*, or native sailboats, were procured and the party got under way.

RUNNING A RED SEA BLOCKADE

"On March 14, about 5 p. m., my squadron left Jabana [a small bay north of Hodeida]. The battle-flag flew at the stern of my proud flagship, and, with three cheers to His Majesty the Kaiser, we started the cruise. Lieutenant



Destroyer at Sea Communicating with a Mine Sweeper

Patrolling the coasts of England for enemy submarines and mines was a necessary and dangerous business. It had to be undertaken whether the weather was foul or fair.

possible through Turkish territory. The *Choising* slipped safely by the British outpost of Perim and entered the Red Sea. Von Mücke landed at the Arabian town of Hodeida, and, after learning the situation regarding the British blockade of the Red Sea from the Turkish authorities, dismissed the *Choising* and made plans for an overland march to the nearest Turkish railroad. A start was made in a march across the desert to the mountain city of Sanaa, but this march resulted in such general sickness that, after spending a month in recovering, the party returned to Hodeida to try their luck once more on the Red Sea. The plan was to skirt

Gerdis commanded the second flagship. . . . As the other *zambuk* was a little larger than mine, I had the sick men put aboard that one. Malaria, dysentery and typhoid still bothered the men, and I had several whose health was such as to cause me not a little uneasiness. I was unwilling, however, to leave my sick behind, as I was certain that nothing but a change of climate would improve them.

"I managed to get all the latest information, such as it was, concerning the English, and I therefore knew that the English blockading ships, two gunboats and the auxiliary cruiser *Empress of Russia*, were maintaining a line of blockade from Loheiva over to Kamaran, Jebel Zebayir to Jebel Zukur. I therefore had to

run this blockade with my sailboats. In order to prevent both boats from being taken at the same place, I ordered Lieutenant Gordis to leave me. We had decided upon a rendezvous to the north where each should wait for the other a certain length of time.

"Soon the second *zambuk* disappeared in the gathering darkness. For the first time we now began losing headway and at daybreak it was flat calm. To our great dismay we lay motionless, and at sunrise found ourselves in the exact position where we least wished to be, namely, in the middle of the English blockading line. Any minute the appearance of the tops of English masts could be expected. Our hopes ran low. The calm succeeded in holding us more effectually to this place than any action of the enemy could bring about. But I had not planned my departure for over the 'week-end' without an object in view. I was sufficiently familiar with the customs of the English to know that during the week-end, that is, Saturday evening and Sunday, the gentlemen were not keen for work. And so it happened that we were not sighted throughout that whole day.

"In the course of the afternoon the breeze set in again and about evening at sundown we could go to sleep with the comfortable reflection that we had, even with two becalmed sailboats, been able to run the English line of blockade."

IV

A FIGHT WITH THE BEDOUNS

THANKS to the incompetence of an Arabian pilot, however, the expedition had not proceeded much farther before one of the two boats was wrecked on a reef. All hands were rescued, but all the medical supplies were lost, a great hardship in view of the number of sick in the party. Another larger boat was procured from the Arabs, accommodating the entire force, and the journey was made, skirting the shore till the port of Lidd was reached. Here occurred the first casualty, a death from typhus. Learning that the next port, Jedda, was tightly blockaded by the British, von Mücke determined to make the journey thither overland. Enlisting the coöperation of the local sheik, he obtained ninety camels and set forward along the coast. At this stage of the journey the entire party

narrowly escaped destruction at the hands of the Bedouin tribes who infested the roads. The Germans fought a pitched battle in the desert against overwhelming odds, but a messenger who slipped through the Bedouin lines at night brought help from the Turkish garrison at Jedda in the nick of time.

SURVIVORS ARRIVE AT ALEPPO

At this city the sick and wounded of the party were taken care of in the military hospital. Starting out again in a *zambuk*, the expedition again skirted the reefs of the coast to a point within ten miles of El Weg, which was their objective. At this latter place on May 2, 1915, they set forth, in Arab caravans, across the desert to El Ula, where the railroad began, and where they found a special train awaiting them. Their dangers were now over. Traveling by rail, they proceeded via Damascus and Aleppo towards Constantinople.

"Finally, at Aleppo, after 10 months of waiting, we received the first news from home. Letters from our loved ones and the Iron Cross—what more could be expected? We received two large sacks of mail so that we passed the next few days in reading the letters from home, in studying over the many letters and tales sent forward to us, and in consuming the supplies of cigars, chocolate, etc., contained among our presents.

"On Whitsunday, in the afternoon, our train arrived at the station at Haidar-Pascha, the last Asiatic station on this railroad. My men had received the long looked-for uniforms which had been sent out, and the officers were also able to fit themselves out in accordance with European 'Kultur,' to whose arms we were again returning.

"The chief of the Mediterranean fleet and, at the same time, chief of the Turkish fleet, Admiral Souchon, could not be dissuaded from coming with his staff clear to Haidar-Pascha to meet us. My men formed hurriedly. Our flag, that would no longer wave over us for 10 more months, was on the right wing. A few short commands which were smartly obeyed showed that even months of a life of privateering could not stamp out their military bearing; then I lowered the tip of my sword before my superior:

"I respectfully report the return of the *Emden's* landing force consisting of five officers, seven petty officers and 37 men!"

OTHER DARING SEA RAIDERS

The Careers of Famous German Cruisers Whose Deeds Fill a Romantic Chapter in the Naval History of the War

NONE of the other German raiders attained the distinction of the *Emden*, but a number managed to escape the British blockade and accomplish considerable destruction before they were finally caught. And brief as their careers were, they were filled with excitement and adventure. Happily, also, the spirit of "ruthlessness" had not in those early days captured the officers who commanded these raiders, as later became the rule in the U-boat service. Captain Müller, of the *Emden*, was not alone in keeping faithful to the tradition of chivalry handed down by Captain Semmes, of the *Alabama*.

THE KÖNIGSBERG

THIS was a protected cruiser of 3,348 tons, ten 4.1 inch guns, and 23½ knots speed. At the beginning of the war she escaped from Dar-es-Salaam, the capital of German East Africa, and proceeded to do mischief in the Indian Ocean. On September 19, 1914, she caught the British cruiser *Pegasus* repairing boilers in Zanzibar harbor, and disabled her with a loss of 25 killed and 80 wounded. After this audacious exploit, a concentration of fast British cruisers drew a net around her and drove her into hiding. On October 30th, she was discovered in shoal water six miles up the Rufiji river, German East Africa. Part of her crew had been landed and intrenched, and as the water was too shallow for the British cruisers, the task was turned over to the monitors. First, however, the English bottled up the mouth of the river by sinking a collier across the channel. But the monitors could not be spared for the work for several months, and from October to July the *Königsberg* stayed secure in her jungle home. As she had camouflaged her masts with palm branches she could not

be detected from the sea, and when the British monitors arrived, they had to depend on aeroplanes for "spotting" her.

The following extract from the letter of an officer aboard the monitor *Severn* gives a picture of the *Königsberg's* destruction:

"... We kept on firing steadily the whole time, as we knew we were hitting—about one salvo a minute. The *Königsberg* was now firing two guns; within 17 minutes of our opening fire I noticed and logged it down that she was firing two.

"In a very short time there was a big explosion from the direction of the *Königsberg*, and from then on she was never free from smoke, sometimes more, sometimes less—at one moment belching out clouds of black smoke, then yellow, with dull explosions from time to time. We kept on firing regularly ourselves, one salvo to the minute—or perhaps two salvos in three minutes—but the gunlayers were told to keep cool and make sure of their aim. There was one enormous explosion which shot up twice as high as the *Königsberg's* masts, and the resulting smoke was visible even from our deck. The men sent up a huge cheer.

THE *Königsberg* DESTROYED

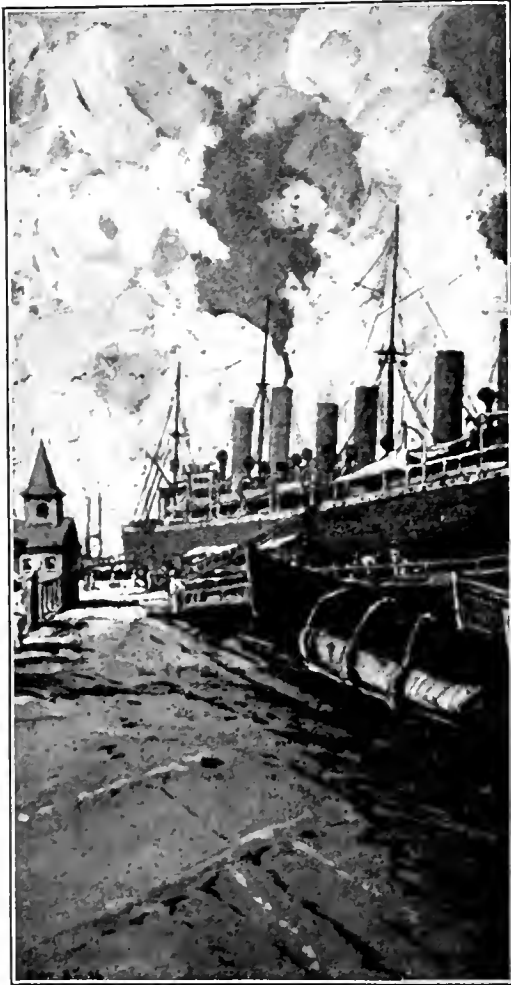
"For some time now we had no reply from the *Königsberg*. At 12.53 I fancy she fired one gun, but I was not certain. She certainly did not fire afterwards. As our guns were getting hot we increased the range, as when hot the shots are apt to fall short. Fine columns of smoke, black, white, and yellow, and occasional dull reports rewarded us, but we were making no mistake and kept at it.

"Another aeroplane turned up, and we now signaled the *Mersey* [monitor] to pass on up stream and open fire nearer. She gave us a great cheer as she passed.

"We raised our topmast and had a look at the *Königsberg*. She was a fine sight. One mast was leaning over, the other was broken at the maintop, and smoke was pouring out of

the mast as out of a chimney. The funnels were gone, and she was a mass of smoke and flame from end to end.

"The *Mersey* fired about 20 salvos and made several hits and then we prepared to leave the river. Before we went the gunnery lieutenant



Two Famous German Sea Raiders
Prinz Eitel Friedrich and *Kronprinz Wilhelm*
interned at Portsmouth, N. H.

and myself went to the top of the mast to get a better view and I took a photograph of the smoke, resting the camera on the very top of the topmast! The captain came up too, and there were the three of us clinging to the lightning-conductor with one arm, glasses in the other, and our feet on the empty oil drum we had fixed up there as a crow's nest."*

* U. S. Naval Institute Proceedings, 1915.

THE KARLSRUHE

THIS was also a protected cruiser, but more modern than the *Königsberg* and in every respect superior. She was of 5,000 tons, 27 knots speed, and mounted a main battery of twelve 4.1 inch guns.

The beginning of the war found her off Sandy Hook, and she made the Atlantic her hunting ground. British cruisers were sent after her, but she succeeded in giving them all the slip. On August 9, 1914, she turned up at Porto Rico and took on coal. Again she vanished. Three weeks later she was surprised while coaling at sea by two British cruisers, but both the *Karlsruhe* and the German liner she was coaling from escaped capture because of their superior speed.

Thereafter she continued her work of commerce-destroying in the South Atlantic and rolled up a record of 17 victims, one of them a liner of 9,800 tons, the *Van Dyck*, plying between New York and Buenos Aires. The following picture is drawn by the *Daily Telegraph* correspondent after interviews with the *Van Dyck's* passengers and crew:

"A lieutenant from the *Karlsruhe* comes alongside the captured vessel and expresses regret that the fortune of war compels him to divert the vessel from her course, and temporarily detain all passengers. He then ascends the gangway with the marines, bows to everybody, expresses regret that the *Karlsruhe* is obliged to interfere with anybody's convenience. After going to the purser's office and taking all the loose cash there, the lieutenant, in the case of the *Van Dyck*, returned to the deck and gave back to the passengers articles of value which had been handed to the purser for safe custody.

"The cruiser's officers and marines distributed picture postcards of the *Karlsruhe* among the *Van Dyck's* passengers, and freely admitted to them that they expected to be vigorously hounded by the British cruisers after they had sunk the *Van Dyck*. They were prepared to fight, they declared, if evenly matched, but would seek a haven along the coast of the United States if pursued by superior numbers. They had captured or sunk fourteen merchant vessels, and were prepared to come north to the transatlantic lanes, and try their luck at sinking a big Cunarder, White Star, or French liner.

"From the captain of the *Asuncion*, which appears to be one of the *Karlsruhe's* tenders, the *Van Dyck's* people learned that the German cruiser is constantly accompanied by four captured merchant vessels, manned by prize crews. The flotilla generally spreads over a line 150 miles long. When a vessel flying an enemy's flag is sighted, word is given by wireless, and away dashes the *Karlsruhe* after the prize. It appears that the four tenders are the *Farn*, *Indrani*, *Rio Negro*, and *Asuncion*, the two latter being Hamburg-American steamers."

The *Karlsruhe's* end is veiled in mystery. In March, 1915, the report came from Denmark that she had gone down, and this report was later conceded to be true by German officials.

THE METEOR

THE commerce-destroyers discussed in the preceding pages were men-of-war, cruisers of the light and speedy types. There were others which were merchantment, "converted" for the purposes of sea-raiding. One of these, the *Meteor*, by her brief and brilliant record, earned a right to her name. The following account from the London *Times* summarizes her career:

"In August [1915] there was a renewal of 'liveliness' on the part of the Germans in the North Sea, which mainly centered round the doings of the auxiliary cruiser *Meteor*. This vessel was formerly a Hamburg-Amerika liner. During June she came into prominence as a commerce raider in the Baltic. Having been equipped with mines, and the means to lay them, she 'broke through the British forces,' according to the German account, on the night of August 7th. Next day she met the British armed patrol vessel *Ramsey*, commanded by Lieutenant H. Raby, R.N.R., which was sunk with the loss of half her crew of about a hundred, including the commander. The Germans stated that they destroyed the *Ramsey* 'after a splendid maneuver,' and according to unofficial accounts this maneuver consisted in the *Meteor* disguising herself as an ordinary merchant ship, with masked guns and torpedo tubes, and flying Russian colors. The *Meteor* subsequently burned the Danish merchant vessel *Jason*, off Horn's Reef, and later transferred the crew of that ship and the survivors from the *Ramsey* to a Norwegian steamer.

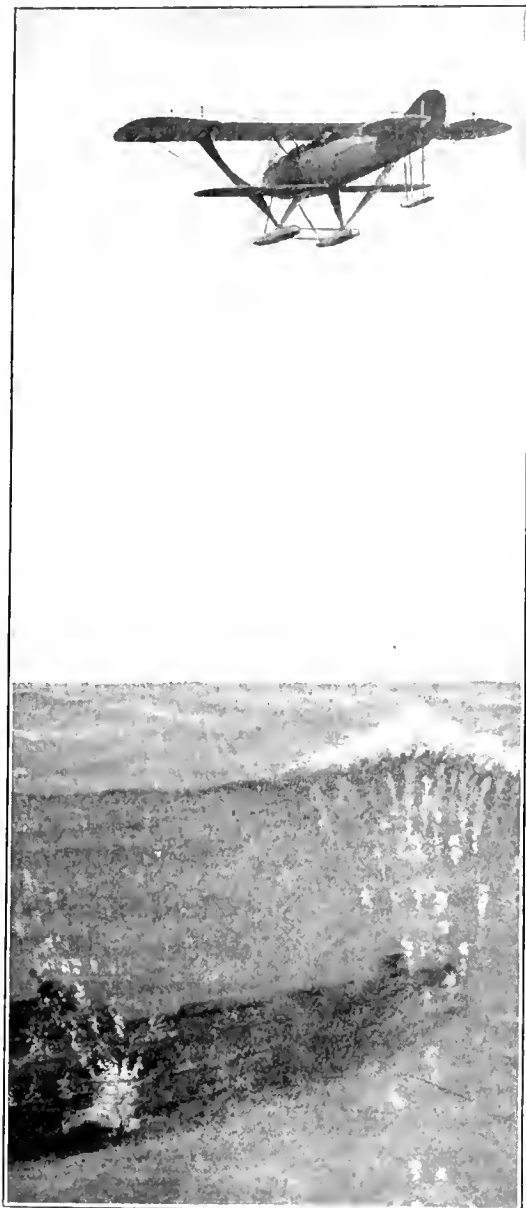
"As regards her minelaying activities, a wire-

less message from Germany to the Sayville Station, U. S. A., stated that she succeeded in reaching the Orkneys and in laying a new field in that neighborhood. Whether this was so or not, the British destroyer *Lynx* had the misfortune to strike one of her mines on August 9, and was sunk with the loss of about seventy officers and men, this total including Commander John F. H. Cole and Lieutenant Brian Thornbury, the commander and first lieutenant of the vessel. Four other officers and twenty-two men were saved.

"At length, on August 9th, a stop was put to the brief but exciting career of the *Meteor*. A squadron of British auxiliary cruisers got on her track, but the German commander, cunning to the last, was not going to risk a fight with superior force. Before the cruisers could overtake his vessel, he blew her up by detonating her remaining mines, having first ordered the crew to take to the boats. They were only some fifteen miles from the German coast, and succeeded in making good their escape. Thus ended a romantic adventure of the kind which had been rather scarce up to that time. It was thought at first that the *Meteor* started out on a similar mission to that of the *Königin Luise*—also a Hamburg-Amerika liner—which attempted on the first day of the war to get into the Thames estuary and strew a number of mines, but was caught and sunk off the Suffolk coast. Another and equally plausible theory was that she hoped to break through the North Sea guard and reach the trade routes to begin commerce raiding, as the *Berlin* had tried to do some months earlier, but without avail, being driven to take refuge at Trondhjem. Whatever her object, however, the measure of success the *Meteor* attained under a dashing and enterprising captain highly pleased the Germans, and when the crew returned to Kiel they received a great ovation, in which Prince Henry of Prussia took part."

THE MOEWIE

ANOTHER raider of this type was the *Moewe*. In November, 1916, she slipped through the British patrols under Swedish colors and in less than two months returned to port, bringing home \$250,000 in gold, 199 prisoners, and a record of 15 vessels captured, most of which were sunk. In addition she had laid mines, one of which caused the loss of the battleship *Edward VII* on January 9th.



© Scientific American.

An Airplane Using Depth Charges

Even seaplanes were provided with depth charges, which they dropped on U-boats with fair precision.

Again she reached the high seas and returned in March with a report of a dozen victims more. One of her prizes was the British liner *Appam*, captured 60 miles north of Madeira and brought into Norfolk, Va., by a prize crew.

THE WOLF

THIS vessel also enjoyed a successful career, and is distinguished from the others by the fact that she carried a seaplane which greatly assisted her operations. She left Germany and proceeded to the Indian Ocean, laying mine fields off the Cape of Good Hope, Bombay, and Colombo. Early in February, 1917, she captured a British steamship and thus began her record of prizes. By "listening in" with her wireless and sending up her seaplane for scouting, the *Wolf* kept herself at a distance from her enemies and spotted her prizes from afar.

With one of these she retired to a secluded port in Dutch New Guinea; and after erecting a wireless plant, the Germans gave their ship a thorough overhauling while the seaplane circled over a wide radius keeping a lookout.

On the way back, the *Wolf*, with another prize, circled as far north as the Arctic circle. The prize was lost by grounding on the Danish coast, but the *Wolf* herself returned safely to Kiel on February 5, 1918. Her record was summed up by the Berlin authorities in these words:

"The auxiliary cruiser *Wolf* has returned home after fifteen months in the Atlantic, Indian, and Pacific Oceans. The Kaiser has telegraphed his welcome to the commander and conferred the Order *Pour le Mérite*, together with a number of iron crosses, on the officers and crew. The *Wolf* was commanded by Frigate Captain Neger and inflicted the greatest damage on the enemy's shipping by the destruction of cargo space and cargo. She brought home more than four hundred members of crews of sunken ships of various nationalities, especially numerous colored and white British soldiers, besides several guns captured from armed steamers and great quantities of valuable raw materials, including rubber, copper, brass, zinc, cocoa beans, copra, etc., to the value of many million marks."

THE SEEDLER

WHILE it is impossible to give space to every German raider of the World War, and the foregoing show amply the character of the commerce-destroying campaign,

no account would be complete without a mention of the little *Secadler*. This was originally an American ship belonging to the Boston Lumber Company. In August, 1915, she was captured by a U-boat and sent in to Bremen, where she was fitted out as a raider. Under her new guise, a motor schooner, she slipped out in December, 1916, under command of Count von Luckner and a crew of 68. She captured and destroyed 13 vessels in the Atlantic, rounded the Horn and sank three more in the Pacific. After six months at sea Captain von Luckner sailed to a little atoll to rest and refit. After landing and raising the German flag, he took his crew and his prisoners on a picnic. On returning from this pleasant diversion they found their vessel had been carried by a heavy swell across a coral reef and wrecked.

Three weeks later von Luckner and five men set off in a little motor boat for the Cook Islands. Later in the Fiji Islands their identity was discovered and they were made prisoners. In September the first lieutenant and the remainder of the crew captured a French schooner that visited the island, and leaving the 48 prisoners to play Robinson Crusoe, departed, to be caught eventually on the coast of Chile and interned. A week after the Germans departed four of the castaways left the island in a leaky whaleboat and in ten days arrived at Tutuila, Samoa, after a cruise of 1,080 miles. The word they brought immediately dispatched relief to the rest of the prisoners, and wrote "finis" to a romantic and dangerous tale of adventure.

DUELS BETWEEN ARMED LINERS

MOST often the raider dealt with merchantmen, avoiding, if possible, the men-of-war, which as a rule were much too powerful for the raider-type of vessel to fight. On two occasions, however, a German armed merchantman met and fought a British armed merchantman in the old fashioned ship duel, with no armored belt on either vessel to keep out the bursting shells.

1. THE *CARMANIA* AND THE *CAP TRAFALGAR*

On September 14, 1914, the armed liner *Carmania* met the *Cap Trafalgar*, a German

vessel of the same type, coaling from two colliers in the Atlantic off the South American coast. The following extract from the London *Times* describes the action that ensued:

"Captain Grant, R. N., of the *Carmania*, fired a shot across the bows of the German ship. She replied by firing at the *Carmania* from her starboard-after gun. The battle thus begun soon became animated, but Captain Grant reported that most of the German shots were aimed too high: in consequence rigging, masts, funnels, ventilators, and derricks, suffered the most damage at first. Whether the German gunners were flurried or not it is difficult to say, but one who was present at the action said that at first the *Cap Trafalgar* was firing five shots to the *Carmania's* one. One German shell passed through the cabin under the fore bridge of the *Carmania* and started a fire which was rather a serious matter, as the chemical fire extinguishers proved of very little use, and the *Carmania's* fire main (used for the extinguishing of fire on board ship) had been shot through. So firm a hold did the fire obtain that the fore bridge had to be abandoned and the ship coned from aft.

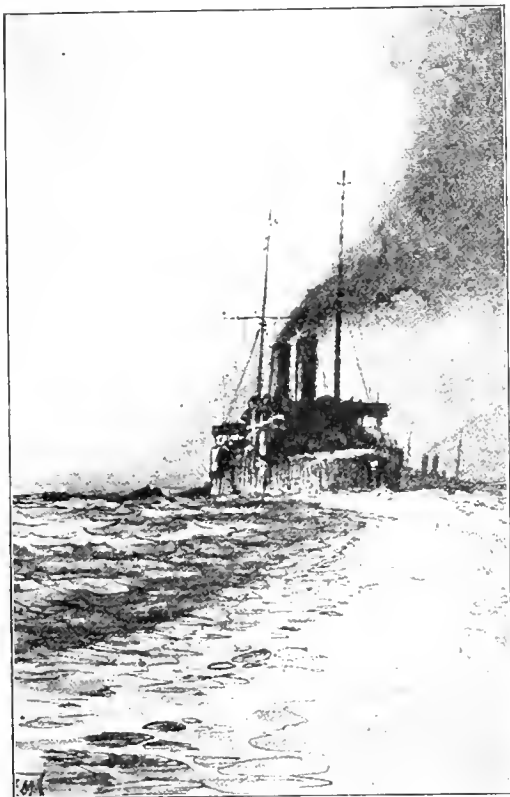
"At the beginning of the action the range was closing, and at one period the ships were as close as 3,200 yards. Captain Grant, however, finding himself annoyed by pom-pom fire at the shorter ranges, opened out the distance, and always handled his ship with the greatest ability and discretion. She was a huge target; in consequence he maneuvered to keep her bows on, in which position he could use four guns, or again, stern on, he could use four guns.

"In this duel the ships were very evenly matched, as both were magnificent vessels, the *Cap Trafalgar* being an almost brand new liner of 18,170 tons. . . .

"The official report gives the time of the action as one hour and forty minutes. The *Carmania* was unable to pick up the survivors as the ship had to be put in front of the wind at once in order to deal with the fire beneath the fore bridge: she was hit by seventy-nine projectiles which made 304 holes; the ship had been rendered unseaworthy and practically all communications and navigational instruments were destroyed. She was escorted into harbor by H. M. S. *Cornwall*, and there effected temporary repairs. Nine men were killed and twenty-six wounded on board the ship. How many lost their lives on board the *Cap Trafalgar* is not known, but the collier landed 279

officers and men of the German ship at Buenos Aires."

A vivid account of the action between the above ships as seen by an eye-witness, will be found elsewhere in this work in the volume dealing with heroic deeds and remarkable adventures.



The Mine Layer

The planting of mines in the open sea, begun by the Germans in violation of the Hague Convention, led to the same practice by the Allied navies. Hundreds of trawlers were employed in this work in the North Sea.

2. THE GREIF AND THE ALCANTARA

A DUEL no less desperate took place in the North Sea on February 29, 1917, between the German raider *Greif* and the British armed liner *Alcantara*. The *Greif* was a sister ship to the *Moewe* and similarly equipped for raiding. She had the Nor-

wegian colors painted on her side, but when she attempted to run the blockade she encountered the *Alcantara*, whose captain insisted on sending a search party aboard. Just as the latter was lowering her boat, the *Greif* opened fire and began one of the hottest naval fights of the war.

The ships were not evenly matched as in the case of the *Carmania-Cap Trafalgar* duel, for the *Alcantara* was of about 16,000 tons, just finished at the outbreak of the war, while the *Greif* was of little more than 2,000 tons, and built in 1886. Nevertheless, her guns were quite as powerful, and stiff fighting went on at a range so close that at one time it seemed likely that boarders would be called away, as in the sea fights of a hundred years ago. After about twelve minutes of close firing the *Greif* began to founder. At the same moment, however, the *Greif* smashed the steering gear of her adversary and left her unable to maneuver. Taking advantage of her opportunity, the *Greif*, even as she sank, drove a torpedo at the helpless *Alcantara*, and the adversaries sank almost together. Survivors of both ships were rescued by British patrols that had hurried to the scene of the firing.

As we have seen, the story of these German sea-raiders is romantic and adventurous. Their captains displayed great cleverness and daring, and yet conducted their raids on a plane of old fashioned sea chivalry that makes a welcome contrast to the subsequent German policy of "ruthlessness" on sea and land. They also succeeded in destroying considerable commerce, but it is important to remember that their effect on the war was practically *nil*. The ships they sank did not total what the French privateers captured or destroyed during any corresponding period of the Napoleonic War; or, for that matter, compare with the terrific losses inflicted by the U-boats in 1917. The sea-raiders did what they could and did it gallantly, but their interest is chiefly a human interest. Their assaults against Allied commerce were merely desperate and futile attempts to stave off the steadily growing pressure of Sea Power.

SECTION II—THE SUBMARINES

THE ROMANCE OF THE SUBMARINE

The Surprising Evolution of the "Devil Boat" from the Crude Invention of Van Drebel to the Perfected Boats of Holland and Lake

ALTHOUGH the submarine has been a practical contrivance for warfare only since about the beginning of the twentieth century, the idea goes back hundreds of years. The first workable submarine appears to have been invented by Cornelius van Drebel, the Dutch physician of King James the First. In fact he built three in the years 1620-24, and in one of these made a successful trial trip in the Thames. According to the descriptions left us, he made his boat watertight by stretching oiled leather over the outside, and propelled it by means of twelve rowers, whose oars were fitted in greased leather sockets. Van Drebel's idea in devising a submarine was to conquer the plague of sea sickness that affected people who had to make the Channel crossing.

The inventor claimed that the most important part of his device was a "chymical liquor" that had the property of restoring to the air "such a proportion of vital parts as would make it good again, for a good while, fit for respiration." There were sceptical folk, however, who declared that the Dutchman had ventilators sticking up out of the water which really did the business for him, and that his mysterious concoction was a fraud. At all events the secret of this compound died with him in 1634.

After van Drebel's day inventors continued to toy with the idea of submarines, but nothing was really accomplished until the time of our own Revolutionary War, when David Bushnell produced his famous *Turtle*. In a letter to Thomas Jefferson, who took a keen interest in the subject, Bushnell described his method of propulsion as follows:

"An oar formed on the principle of the screw was fixed in the forepart of the vessel; its

axis entered the vessel, and being turned in one direction rowed the vessel forward, but being turned in the other rowed backward. It was constructed to be turned by the hand or foot."

Unfortunately we have no trustworthy drawings of the *Turtle*, but she was unquestionably a very ingenious affair.

THE FIRST SUBMARINE

But in Bushnell's day the advantages of the submarine in warfare were fully realized, and he designed the *Turtle* to attack the British fleet in New York harbor. Prevented by continued ill-health from navigating the vessel himself, he turned it over to a sergeant of the Continental Army, Ezra Lee, who took it out in 1776 in an effort to sink the sixty-four-gun ship *Eagle*. Lee managed his task with great coolness, when one considers the risk he ran of going to the bottom, especially as the mine which he carried was set to go off by clockwork precisely an hour after the *Turtle* shoved off, but the result was failure. Bushnell describes the incident in his letter to Jefferson as follows:

"After various attempts to find an operator to my wish, I sent one who appeared more expert than the rest from New York to a 50-gun ship lying not far from Governor's Island. He went under the ship and attempted to fix the wooden screw into her bottom, but struck, as he supposes, a bar of iron which passes from the rudder hinge, and is spiked under the ship's quarter. Had he moved a few inches, which he might have done without rowing, I have no doubt but he would have found wood where he might have fixed the screw, or if the ship were sheathed with copper he might easily have pierced it; but, not being well skilled in the

management of the vessel, in attempting to move to another place he lost the ship. After seeking her in vain for some time, he rowed some distance and rose to the surface of the water, but found daylight had advanced so far that he durst not renew the attempt.

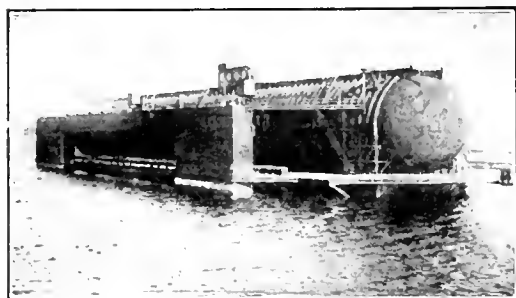
"He says that he could easily have fastened the magazine under the stem of the ship above water, as he rowed up to the stern and touched it before he descended. Had he fastened it there the explosion of 150 lbs. of powder (the quantity contained in the magazine) must have been fatal to the ship. In his return from the ship to New York he passed near Governor's Island, and thought he was discovered by the enemy on the island. Being in haste to avoid the danger he feared, he cast off the magazine, as he imagined it retarded him in the

tardly" kind of warfare. The story of the *Turtle* is an important milestone in the progress of the submarine not only because it had working value—at least it navigated successfully—but also because it is the first case of a submarine used in warfare. For the first time we see the submarine and the submarine explosive used together.

FULTON'S CIGAR-SHAPED NAUTILUS

The next important name in the history of submarines is that of another American, Fulton, better known for his connection with the invention of the steamboat. Fulton went to London in 1787 to study painting, but soon found himself much more interested in mechanics. As he got scant encouragement for his work in England he went to France and had scarcely settled down when he appeared before the representatives of the French government with plans for a submarine, which he called the *Nautilus*. For some three years the opposition of the French Minister of Marine was too strong to give him an opportunity, but in 1800 he succeeded in getting Napoleon sufficiently interested to permit him to go ahead and build. The result was a cigar-shaped vessel, about seven feet in diameter and over twenty-one feet in length. The *Nautilus*, apparently, was the first submarine to assume the "cigar" or fish shape. It was propelled by a wheel astern, worked by hand from within, and it had many novel appliances, as, for example, a little conning tower forward and a collapsible mast and sail with which it navigated on the surface. The hull was made of copper, stiffened by iron ribs.

On June 26, 1801, Fulton met the test set by the French government with brilliant success. He navigated the harbor of Brest under water, fastened his mine to the bottom of an old hulk moored there for the purpose and blew her up. The great objection of the Ministry of Marine was, however, not met by this success. The official opinion of the French Navy was to the effect that any one captured in a submarine would be certain of being hanged as a pirate. Discouraged by opposition and indifference in France, Fulton went back to England and interested Pitt in the *Nautilus*. Again he made a suc-



© Underwood and Underwood.

A German Submarine Dry Dock and Test Tank in the Kiel Canal

swell, which was very considerable. After the magazine had been cast off one hour, the time the internal apparatus was set to run, it blew up with great violence.

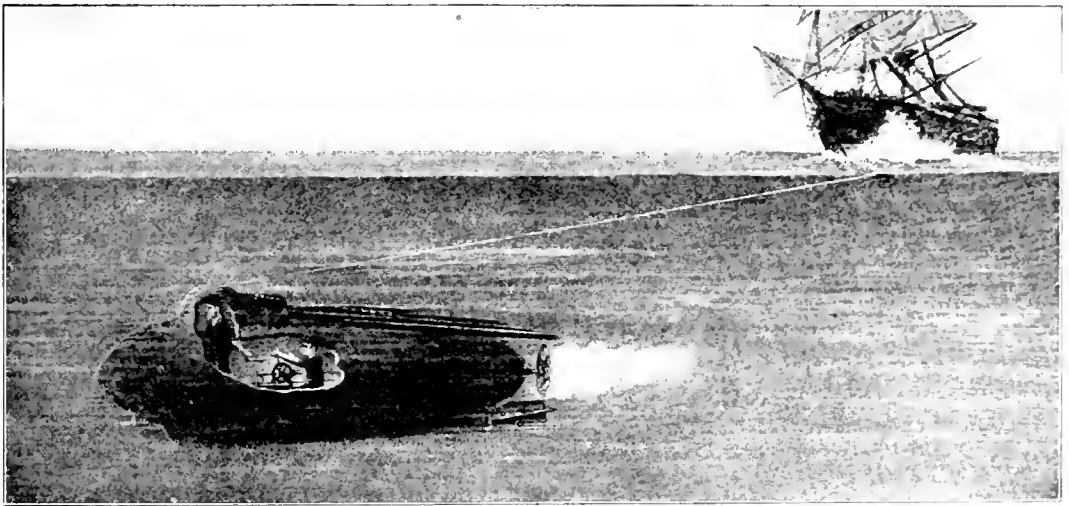
"Afterwards there were two attempts made in Hudson's River, above the city, but they effected nothing. One of them was by the aforementioned person. In going towards the ship he lost sight of her, and went a great distance beyond her. When he at length found her the tide ran so strong that, as he descended under water for the ship's bottom, it swept him away. Soon after this the enemy went up the river and pursued the boat which had the submarine vessel on board and sunk it with their shot. Though I afterwards recovered the vessel, I found it impossible at that time to prosecute the design any farther."

Although the attacks of the *Turtle* did not succeed, they aroused considerable alarm in the British fleet, and much eloquence was expended by the British officers on this "das-

cessful demonstration, this time in the Thames before representatives of both houses of Parliament. But the opposition of the Navy was so strong that the invention was rejected. Earl St. Vincent, for example, exclaimed that Pitt was an "old fool, to encourage an invention that threatened the very existence of the British Navy." Finally, in 1806, the inventor came back to America only to meet the same opposition from the men who controlled the budding American Navy. Nothing daunted, he went to work a few years later on another submarine eighty feet long, designed to hold a hundred men, but his

THE CONFEDERATE HUNLEY

Shortly afterwards the Civil War broke out in America, and the Confederates, finding themselves squeezed by the increasing pressure of Union sea power, turned to the submarine. As the Confederacy suffered from almost a total lack of machinery and the means of building vessels of any kind, the men who tried to develop submarines to break the blockade had desperate difficulties. Accordingly, the little *Hunley*, the most famous one of these "Davids," as they were called, was more crude in its construction than Ful-



Permission of Scientific American.

Fulton's Submarine *Nautilus*

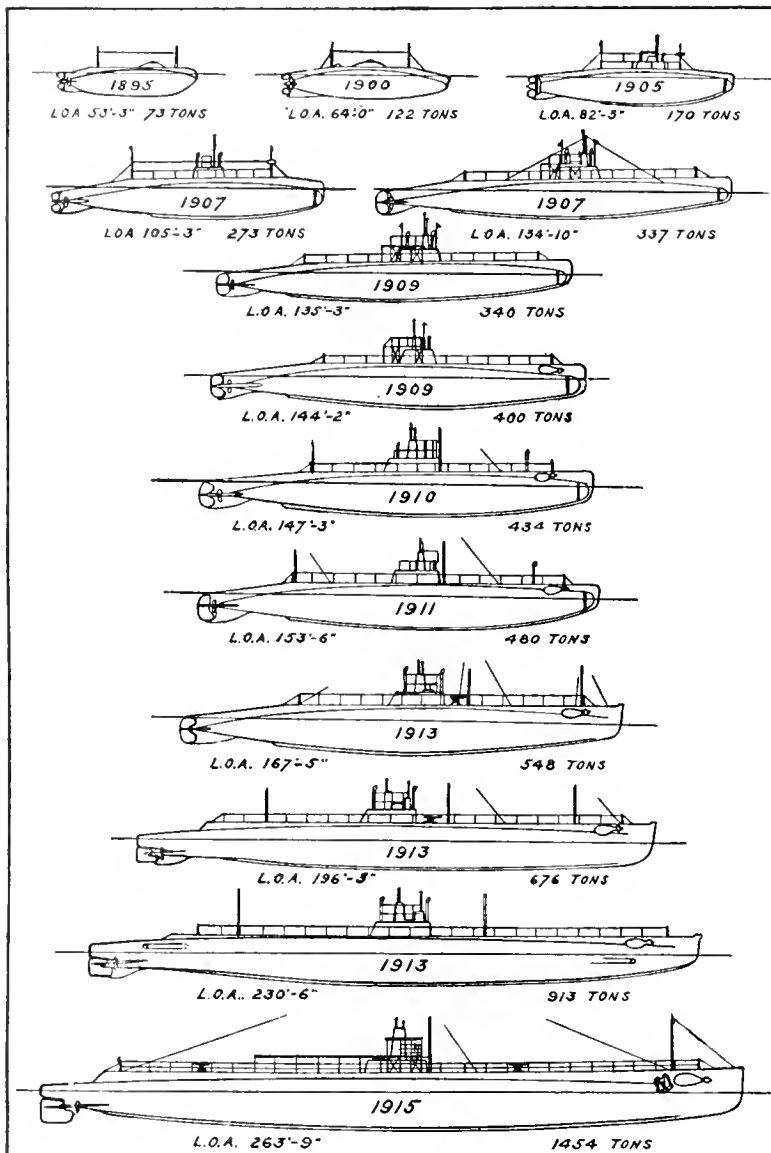
One of the earliest undersea craft; this curious boat made several successful tests in foreign waters over a hundred years ago.

death in 1815 left the boat uncompleted and there was no one to take up the work where he left it.

A generation after Fulton's death a Bavarian named Bauer revived the idea of a submersible vessel of war. After some unfortunate beginnings, involving loss of life as well as capital, Bauer succeeded, in 1856, in producing a submarine, *Le Diable Marin*, for the Russian government. This worked well, but after a short while the Russian officials got tired of the new toy, and when the *Diable* came to its end through a mishap nobody took the trouble to help the poor inventor get it up again, and Bauer went back to Bavaria a broken and impoverished man.

son's *Nautilus*. She was made of boiler iron, was about thirty feet long and accommodated a crew of eight. These men worked the propeller by means of a hand shaft, while the captain steered and worked the halyards of a spar torpedo in the bow. The *Hunley* was named after its inventor, who was among some thirty-five men who were suffocated in it during its various trial trips.

Finally, Lieutenant Dixon, of the Army, obtained permission from General Beauregard to take the *Hunley* out with a volunteer crew and attack the steam frigate *Housatonic*, then lying anchored in one of the channels of Charleston harbor. Permission was granted on condition that the



Permission of Scientific American.

Development of the Holland Submarine from 1895 to 1915

Hunley should navigate on the surface and attempt no diving. Accordingly, on the evening of February 17, 1864, the little *Hunley* rippled away on the surface of the harbor and, reaching the side of ship, discharged the torpedo before her victim could move or bring a gun to bear. The *Hunley*, however, did not return, and after the war when the wreck of the *Housatonic* was being cleared away the little submarine was discovered

wedged into the very hole made by the explosion of her torpedo. Again the *Hunley* had gone down with all her crew, but until 1914 she remained the only submarine that had ever sunk an enemy in time of war.

JULES VERNE—THEN HOLLAND AND LAKE

The period between the Civil War and the Great War naturally meant rapid progress

in submarine construction. It is interesting to note how much of Jules Verne's *Twenty Thousand Leagues Under the Sea*, written as far back as 1873, has come true in the development of the modern submersible. It is the most astonishing scientific prophecy in literature. One thing the author did not foresee was the Whitehead torpedo, the joint invention of an Austrian army officer and an English manufacturer at Fiume, who has given his name to the weapon. This, of course, made an enormous advance in the offensive power of the submarine. In this late period the two most important names are those of Holland and Lake. The latter owed his inspiration to reading Jules Verne. The former, born in Ireland, originally planned to "free"

the island of his birth by means of a device that the British Navy could not combat. The name "Fenian Ram," given to his earliest effort, bears witness to this romantic purpose. Towards the close of the last century, however, he had devised a submarine that was adopted by the U. S. Navy, and the *Holland No. 9* became the first submarine in our service. The inventions of Simon Lake supplemented those of Mr. Holland, so that without going into details it is fair to say that the modern submarine rests on the work of these two American inventors.

The accompanying diagram from the *Scientific American* shows the extraordinary development of the Holland boat during the twenty years of its history from 1895 to 1915.

SUBMARINE EXPLOITS IN THE WAR

True Stories of Daring Feats of British and German Undersea Boats in Home and Foreign Waters

IN spite of the amazing improvement in the submarine's effectiveness, naval opinion generally was inclined to regard it rather sceptically. It was out of the run of surface warfare and it had never undergone the test of war. In the Russo-Japanese War no submarines were used, and in 1914 they were still an unknown quantity. In June of that year Admiral Sir Percy Scott, the gunnery expert of the British Navy, threw a bomb into naval camps by a letter to the *Times*, in which he expressed his opinion that the submarine, aided by aircraft, had made surface fleets obsolete. Discussion was running high on this theme when the Serajevo assassination took place, and a few weeks later the war had set the stage for the submarine to show, for the first time, its power as a weapon of war. On September 22, 1914, a terrible disaster, the torpedoing of three British cruisers in less than an hour, seemed to verify Sir Percy Scott's prediction in the most emphatic way.

At this time the Germans had comparatively few undersea craft, but from now on they began to build them as rapidly as possible; by 1918 the number in service was about 300.

SINKING OF THE *ABOUKIR*, *HOGUE* AND *CRESSY*

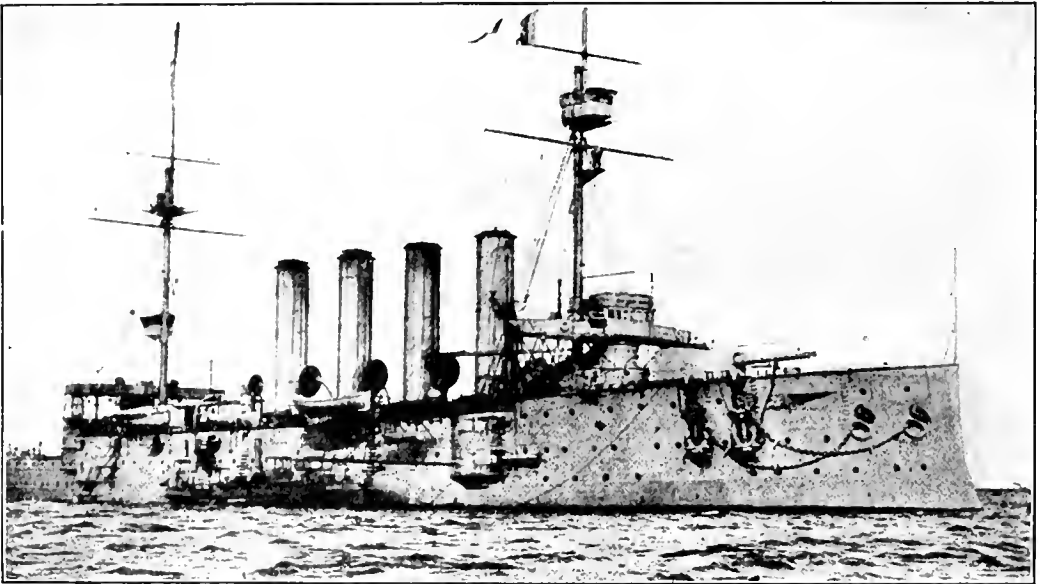
THE sinking of three cruisers, the *Aboukir*, the *Hogue*, and the *Cressy*, was accomplished by the *U-9*, Lieutenant Commander Otto Weddigen. It happened that for the ten days preceding the 22nd of September, 1914, a furious wind had been whipping the North Sea, culminating in a great gale on the 18th. In consequence the destroyers had been driven into port for shelter. On the 21st the wind had moderated so far that orders were issued for the destroyers to go out on the following day and resume their duties as screen for the larger ships. On the morning of the 22nd the three cruisers separated to assume their patrol stations for the day, but as yet they had not been joined by the destroyers. At six-thirty the *Aboukir* was suddenly struck by a torpedo. What followed is thus described in the words of an eye witness:

"There was only one explosion, and most of the onlookers were of opinion that she (the *Aboukir*) had struck a mine, and following their first and strongest impulse, both the

Cressy and *Hogue* closed in at once to save life. At 6.55 a. m. the *Hogue* was within a quarter of a mile of the *Aboukir* on her starboard bow, with the *Cressy* a similar distance away on the other side. The *Aboukir* had started to lower her starboard sea-boat, but the list had become so great that she stuck and could not be got away. The sun was shining very brightly, and the red glow of her copper bottom with the pink naked bodies of the men as they climbed down her sides made a picture that will never be forgotten.

"Some jumped in, others sat down and slid, still others contented themselves with walking

ter with a number of saved was close to on the port bow. When the *Hogue* was struck she stood off a few yards and waited. Meanwhile another party were busy throwing overboard several planks and baulks of timber which had been used for the construction of targets. The rest of the men stood quietly by waiting for the order to jump, and passing the time in slipping off their clothes. After a few minutes the order came and the men went in. Unfortunately, obeying a natural impulse, by far the greater majority went off the port bow close to where the launch lay, and as the *Hogue* disappeared about six minutes after she had



The British Cruiser *Aboukir*

One of three war vessels sunk in the North Sea by the *U-9* on the same day.

a few paces as the vessel heeled over. Suddenly, with two tremendous crashes, one immediately after the other, the *Hogue* was struck, both torpedoes exploding in the same place, just aft of the starboard after bridge. The ship leapt up like a roweled horse (she is a vessel of 12,000 tons, so this gives some idea of the violence of the explosion); and quivered all over, just as a steel spring will quiver when firmly held at one end and sharply struck at the other. Looking over the side the twin lines of bubbles made by the torpedoes were plainly visible and led the eye at once to the first sight of the submarine's periscope. The *Hogue's* two sea-boats had been got away, together with the launch, in aid of the *Aboukir*, and the lat-

been struck scores of them clung to the gun-wales of the launch until she was unable to stand the strain and fell to pieces, precipitating her own crew and those unfortunates already saved from the *Aboukir*. What followed is best left to the imagination; suffice it to say that nearly all those from the *Hogue* who were lost perished here."

Two Dutch steamers and a British trawler came upon the scene and rescued the survivors from the boats and the water, while the submarine returned to her base. When the story was published the world gasped with horror and apprehension. Was there any

limit to the possibilities of the submarine! One little, old-fashioned U-boat had sent to the bottom 36,000 tons of naval machinery, with a loss of nearly 1,200 lives, and returned home without a scratch! For a time the British insisted that the work had been done by at least three submarines, but the report of Lieutenant Commander Weddigen settled the fact. Fortunately we have his informal story of the exploit as well. It will be found elsewhere in this work in the volume dealing with heroic deeds and remarkable adventures.

Commander Weddigen's next assignment was the *U-29*, the last word in submarine construction at that time. His conduct as commander of this vessel in March, 1915, was so marked with chivalry as to win the high praise of his enemies. For example, having attacked a steamer, he allowed the crew ten minutes to take to the boats, saying "We wish no lives to be lost," and seeing one man fall into the water he sent a dry suit of clothes for him. Unfortunately in the latter part of the same month this gallant young captain was sent to his death with all his men. In a brief career of a few months he had shown both the power and the vulnerability of this new weapon of warfare, and he had also set a standard of decency in submarine methods, which unfortunately his brother officers felt no obligation to follow.

LIEUT. COMMANDER HORTON AND THE *E-9*

SINCE the submarine is primarily a weapon for the naval power on the defensive, and it was Germany that was on the defensive on the sea, the submarine has become popularly associated with German commanders. And yet some of the most brilliant exploits of the submarine in the war were performed by the English. Lieutenant Commander Max Horton led the way in the *E-9*. On September 13, 1914, several days before the *U-9*'s exploit, he took his vessel into German waters and torpedoed the light cruiser *Hela*, six miles south of Heligoland. A swarm of destroyers came out after him but though they hunted him for hours they

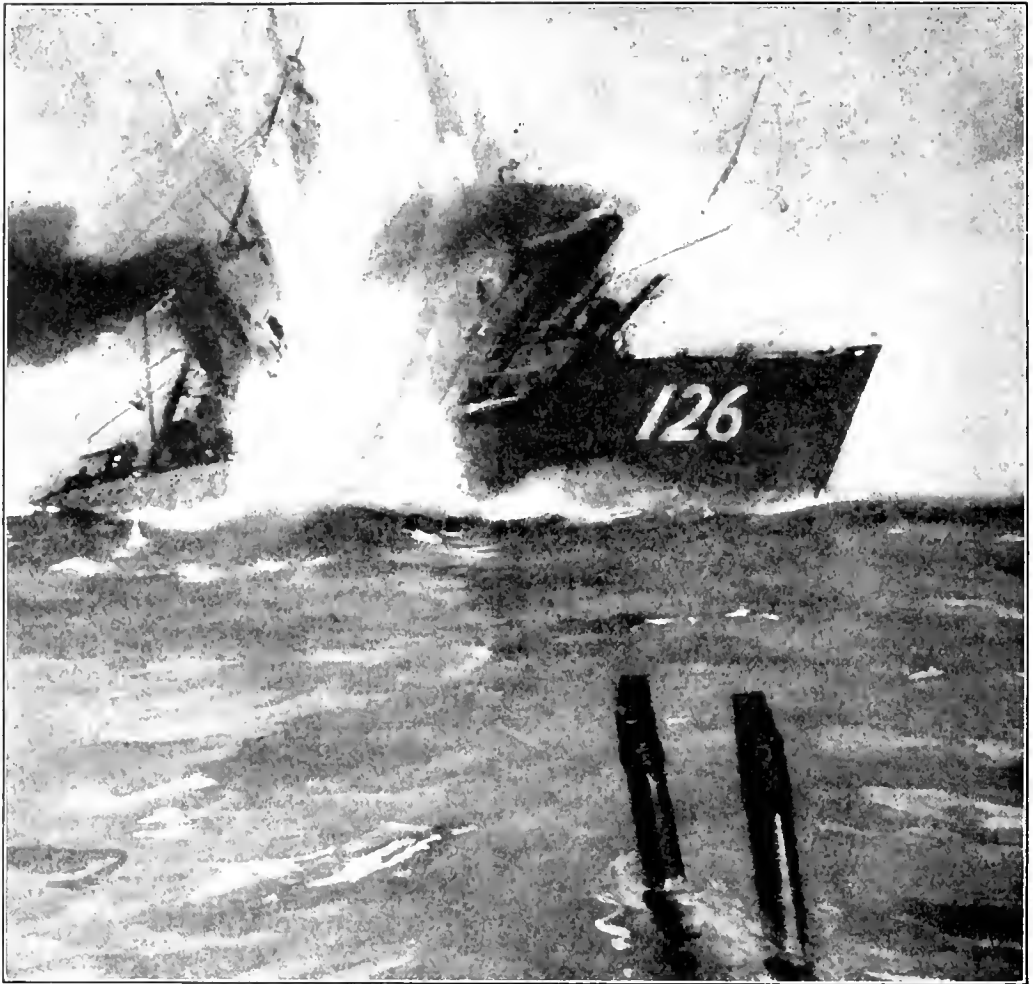
failed to discover him. The next day, in pursuance of orders, Horton made a careful survey of the outer anchorage of Heligoland, a service of the most perilous sort, and got away without discovery and without accident. In addition to the ordinary perils of mines and enemy patrols, Horton had to contend with



Lieut. Commander Max K. Horton

He distinguished himself by daring submarine raids on German ships of war in their own waters.

the tempestuous weather, already mentioned in connection with the *Aboukir*, *Hogue* and *Cressy*, which threatened to drive him on a lee shore and which made life on board well-nigh unendurable. It was almost impossible to keep the conning tower hatches open on account of the high seas, and there was no rest for any one on board because even at the depth of sixty feet the vessel rolled heavily



From the *London Times History*.

The Sinking of the German Destroyer *S-126*

The British submarine *E-9* (Commander Horton) torpedeed the German destroyer in the mouth of the Ems, October, 1914.

and "pumped" up and down in jumps of twenty feet.

On October 6, Horton ran in close to the mouth of the river Ems and blew up the destroyer *S-126*. A German cruiser and another destroyer rushed out to avenge the loss, but again the *E-9* got away safely. This exploit was performed near the island of Borkum, which was a German naval base, and within sixty miles of the other bases of Heligoland and Wilhelmshaven, in waters which the Germans regarded as absolutely safe.

Commander Horton again distinguished himself on July 2, 1915, by torpedoing the German predreadnought battleship *Pommern*

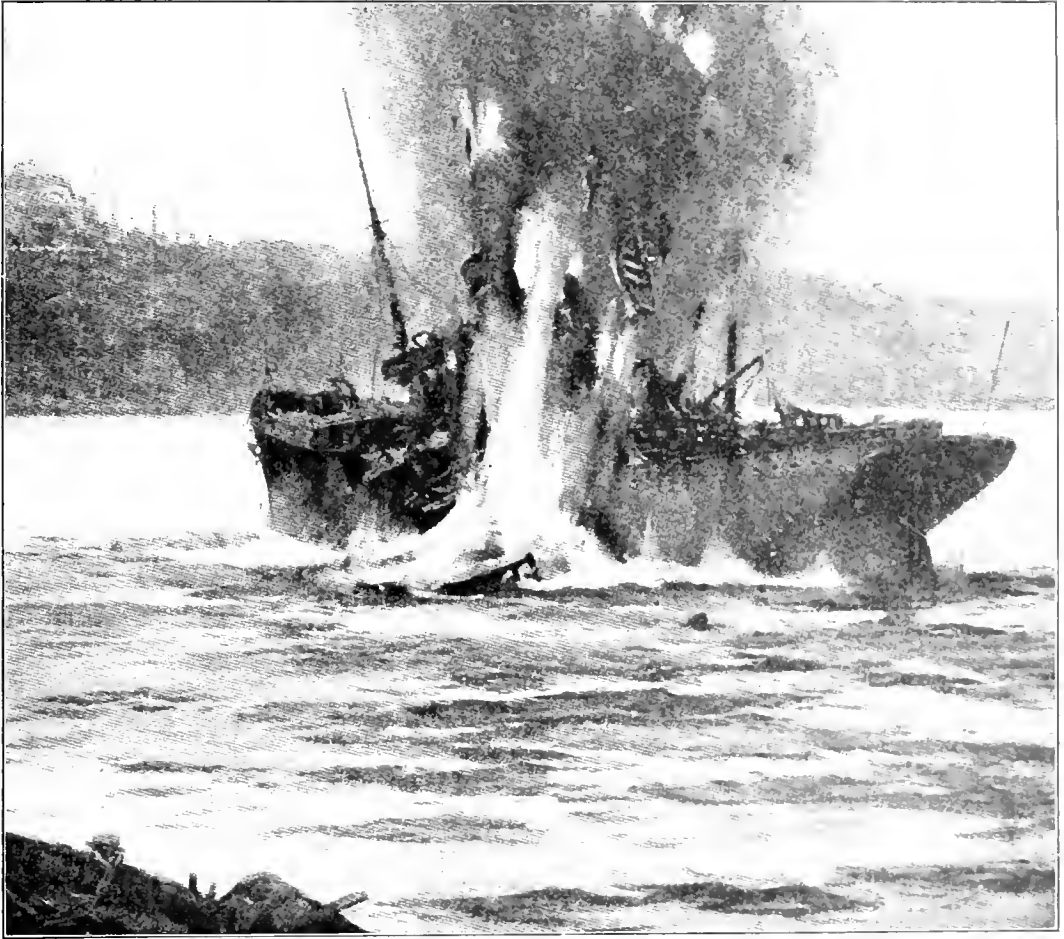
in the Baltic, although the victim in this instance was able to regain port.

In justice to the record of the British submarine commanders, which is brilliant as it stands, it must be remembered that while the British fleets were out practically all of the time, the Germans kept their big ships, and most of the time their light cruisers also, locked up in fortified harbors. The British submarine therefore had to worm its way right to the enemy's gates, through unknown mine fields, in order to find a target for its torpedoes. That the submarines were very much in the thick of the fighting is evidenced by the losses, which numbered 54.

UNDER MINE FIELDS IN HIS SUBMARINE

The name Dardanelles will always be memorable in British history for the most frightful blundering, in conception and execution, by the men responsible for the cam-

the Sea of Marmora, proceeded to use his eight torpedoes to the best possible advantage. He sank three gunboats and one loaded transport and drove a steamer ashore in the course of a fortnight's cruise in Turkish waters, and returned safely to be awarded



From the *London Times* Hist.

A British Submarine in Action in Constantinople Harbor

Sinking of the Turkish transport *Stamboul*, after being hit by a torpedo fired by the submarine *E-11*, commanded by Lieut.-Commander Nasmith, V.C.

paign, and for the unsurpassed heroism of the men who willingly laid down their lives in the effort to save by courage what had been lost by stupidity. Some of the brightest spots in the story are the feats of the British submarines. Lieutenant Commander E. C. Boyle, of the *E-14*, for example, dived his vessel under the mine fields of the Dardanelles on April 27, 1915, and, coming up in

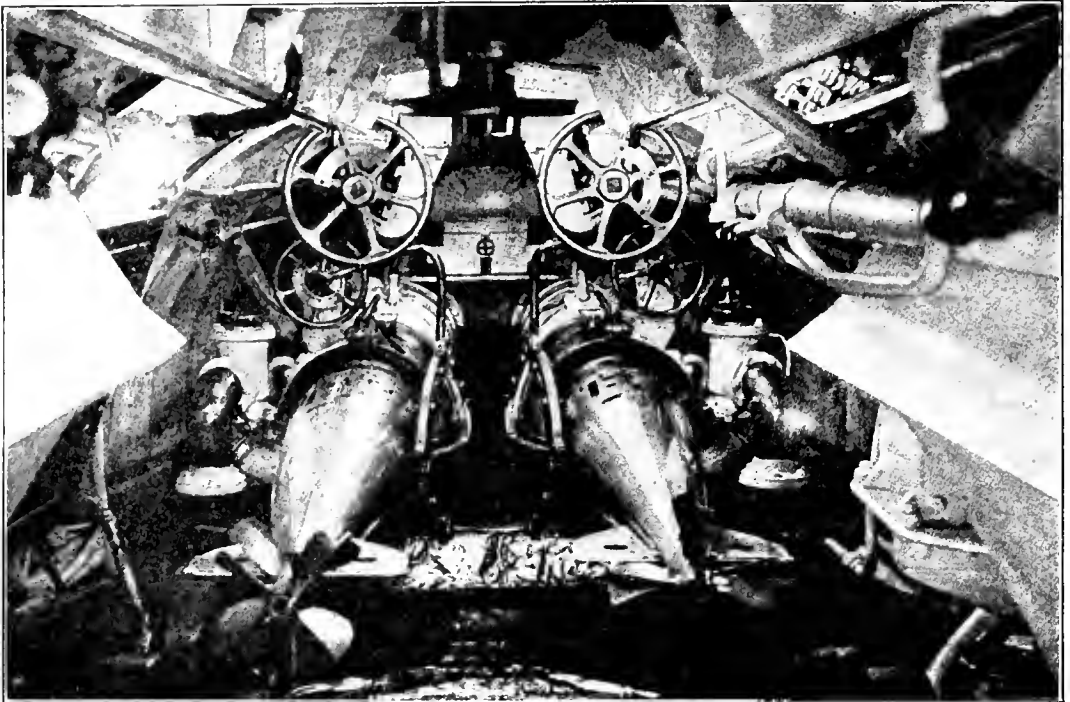
the V. C. In considering this and similar exploits of the submarines one must remember that there were not only mine fields planted in the channel of the Dardanelles, but free mines floating down constantly. In addition there were land batteries and submerged torpedo tubes along the shore, not to mention submarine nets. The wonder is that a single one was able to make the passage.

E-II IN THE SEA OF MARMORA

ANOTHER one of these daring and successful British submarines was the *E-II*. The following story by one of the crew, published in the London *Chronicle*, describes the exploit that won for her captain, Lieutenant Commander Nasmith, the V. C., and a Distinguished Service Medal for every member of the crew:

mora and bumped around for a few days without sighting a thing until Sunday morning, when we were diving outside of Constantinople and saw a big gunboat, and at 6.25 a. m. we gave her a 'tin fish.' By 6.30 a. m. she was no more; but before she sank, while she was listing over, they opened fire on us. The second shot hit our periscope and 'done it in.' That gunner must have been a cool card, eh?

"On Monday we sighted a steamer, came to the surface alongside her and told her to stop.



A Submarine's Forward Torpedo Tubes

Torpedoes are fired from long tubes, or guns, which, however, differ from ordinary guns in that the impulse they give to the torpedo is sufficient only to launch it clear of the ship and into the water, when its own engines take charge and drive it forwards.

"We left Imbros one morning about 3 o'clock and steamed toward the Dardanelles and dived as day was breaking and—well, got through the Narrows O. K., arrived on the other side and saw two battleships. We were getting ready to torpedo one of 'em when they spotted us, opened fire on us, and nipped, bunked, ran away.

"We then journeyed on for a mile or two and then went to the bottom and rested until about 8 p. m., when we came up. It was dusk; so we looked around. Nothing in sight. We broke the surface and entered the Sea of Mar-

She stopped, and the men were so anxious to get clear that one boat capsized. No lives were lost. There was a Yankee correspondent aboard who tried to bluff; no good, though, 'cos an officer and two men boarded her and discovered she had a 6-inch gun, several gun mountings, and 15-inch ammunition aboard. So we blew her up.

"A few minutes after we sighted another steamer and told her to stop. She wouldn't. We chased her into the harbor, and when she was securing alongside a pier we torpedoed her.

"Soon after we sighted another steamer and chased her till she ran ashore. We were about to board her when some cavalry came up and opened fire. We replied and dropped a few, and then dived and torpedoed the ship.

CONSTANTINOPLE IN UPROAR

"Next day (Tuesday) our skipper decided on entering Constantinople. To make a long story short, we got into the harbor without mishap and fired two torpedoes, one of which sank a transport loaded with troops, and the other exploded on shore somewhere. We learned afterward that it caused some panic. The troops refused to go on another transport, the shops closed, and people ran up the hills—in fact, it caused uproar for a time.

"The following Friday morning we saw five transports escorted by destroyers. We banged the first and biggest one, which sank in about three minutes.

"A few days later we went back to our old corner, where we sank those other three and caught a supply ship napping.

"A few days after we torpedoed a German transport, and then we got no more blood for a time until last Monday morning, on our way back, just before entering the Narrows, we sank another transport. That was our farewell smack.

"When we broke surface that evening we found a mine hanging over our bows. We chucked it off as quick as possible, when our escort came up, gave us three cheers, and off we went."

This mine had been towed eleven miles before it was brought to the surface!

THIS "SUB" SHELLED A RAILWAY TRAIN

THE remarkable experiences in the Sea of Marmora of the *E-7* are vividly pictured in the following letter from one of her junior officers written to his mother:

"H. M. Submarine *E-7*.

"We returned safely yesterday after 24 days up the Dardanelles in the Sea of Marmora. It is hopeless to try to give a detailed account in a letter, but you can take it from me it was a fine show. We broke all previous records. Cochrane [commanding officer] was absolutely splendid. The tale of our doings is the sort of thing one reads of in the old days. We

went around the Sea of Marmora, leaving a trail of sunk and burning ships. We fairly shook them to the core.

"We are the first submarine in history to bombard a place on shore under fire. I think we were under fire about three times a day on the average, and penetrated into all sorts of places and destroyed shipping. We even shelled a railway and destroyed two troop trains. We shelled the embankment and blocked the line and then caught the trains as they came along. It was the funniest thing you can imagine to see the trains try to hide behind trees, but we caught her and smashed her all to blazes. The ammunition all blew up with a terrific explosion. The soldiers, of course, got out and took cover and fired tons of ammunition at us, but we were out of range.

E-7 IN THE GOLDEN HORN

"Altogether we sunk one gunboat, five steamers (one of 3,000 tons), and seventeen large sailing ships, two trains, one railway embankment, and a few villagers who fired on us and got it in the neck for doing so. We also dived up to Constantinople and fired a torpedo at the wharf, at the arsenal, where there were a lot of ammunition lighters, and there was a most terrific explosion, which shook the boat, although we were one and one-quarter miles away. What happened I don't know, but something must have got it in the neck, judging by the bang. We had a small duel with a small gunboat one day on the surface and drove her off, although she fired 200 rounds from her two guns. After that we were left alone and everything ran like blazes when we got anywhere near. The only drawback was that we all had dysentery, and Halifax, the 2nd officer, and a seaman got badly burned setting fire to a steamer, so Cochrane and I had to keep watch all the time, and by the time 24 days were gone we were absolutely done up. . . . We had no trouble diving the Sea of Marmora, but when we came down we had an awful time, as the Turks had rigged up all sorts of nets and things to catch us, and we got mixed up in them and also got fouled by mines three times.

"The reception we got in the harbor was great. The whole fleet and everything manned the rails and cheered us madly. Just imagine us—all dirty and unshaven, and the flag with bullet-holes all over it, and conning tower all dents from bullets and rusty—steaming through the lines, and thousands of men cheering like mad. Battleships, cruisers, torpedo boats, transports, and the captains leading the cheers.

It was great. I have heard cheers before, but this was the real thing. Poor old Cochrane's eyes were full of tears, as he saluted the cries of 'Are we downhearted?' and 'Well done, E-7.' At present I am resting on land and basking in the light of popular favor. It is very nice to be a hero among one's own cloth, you know, because they really mean it, and they really understand."



© Underwood and Underwood.

An Obsolete Coat of Arms

The German emblem shown on one of the captured German U-boats which were brought to the Brooklyn Navy Yard early in 1919.

Unluckily, three days after Lieutenant Commander Cochrane received the D. S. O. for the above exploit, the E-7 was sunk off the Dardanelles by the Turks. Three officers and twenty-five men, however, were saved. Other submarines lost at the Dardanelles were A. E.-2, E-14, E-15, and E-20, all in the year 1915.

DUELS BETWEEN SUBMARINES

EARLY in the war experts informed us that the submarine itself was useless for fighting the submarine because it was too blind. During the war, however, this dictum went overboard along with several other pre-war notions. Sir Henry Newbolt, in his book *Submarine and Anti-Submarine*, collected a number of tales of submarine duels, of which the following are examples:

"Let us take first the case of E-54, Lieut. Com. Robert H. T. Raikes, which shows a record of two successes within less than four months—one obtained with comparative ease, the other with great difficulty. The first of the two needs no detailed account or comment. E-54, on passage to her patrol ground, had the good fortune to sight three U-boats in succession before she had gone far from her base. At two of these she fired without getting a hit; but the third she blew all to pieces, and picked up out of the oil and débris no less than seven prisoners.

"Her next adventure was a much more arduous one. She started in mid-August on a seven-day cruise, and in the first four days saw nothing more exciting than a neutral cruiser carrying out target practice. On the morning of the fifth day, a U-boat was sighted at last; and after twenty-five minutes' maneuvering, two torpedoes were fired at her, at a distance of 600 yards, with deflection for eleven knots. Her actual speed turned out to be more nearly six or seven knots, and both shots must have missed ahead of her. She dived immediately, and a third torpedo failed to catch her as she went down.

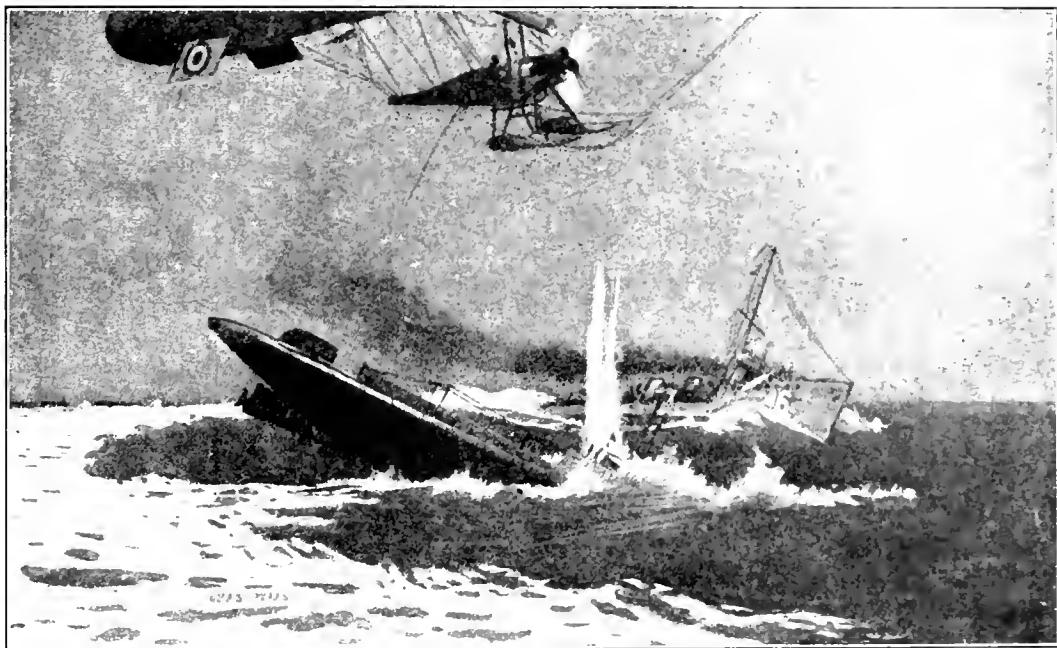
"An hour and twenty minutes afterward she reappeared on the surface, and Lieutenant-Commander Raikes tried to cut her off, by steering close in to the bank by which she was evidently intending to pass. E-54 grounded on the bank, and her commander got her off with feelings that can be easily imagined. Less than an hour after, a U-boat—the same or another—was sighted coming down the same deep. Again Lieutenant-Commander Raikes tried to cut her off, and again he grounded in the attempt. He was forced to come to the surface when the enemy was still 2,000 yards away. To complete his ill-fortune, another U-boat was sighted within an hour and a quarter, but got away without a shot being possible.

"Twenty-four hours later the luck turned,

and all these disappointments were forgotten. At 2.6 p. m. Lieutenant-Commander Raikes sighted yet another U-boat in open water, on the old practice-ground of the neutral cruiser of three days before. He put *E-54* to her full speed, and succeeded in overtaking the enemy. By 2.35 he had placed her in a winning position on the U-boat's bow and at right angles to her course. At 400 yards' range he fired two torpedoes, and had the satisfaction to see one of them detonate in a fine cloud of smoke and spray. When the smoke cleared away the U-

same moment, and the two dived simultaneously. This, as may easily be imagined, is one of the most trying of all positions in the submarine game, and so difficult as to be almost insoluble. The first of the two adversaries to move will very probably be the one to fall in the duel; yet a move must be made sooner or later, and the boldest will be the first to move.

"Lieutenant Bradshaw seems to have done the right thing both ways. For an hour and a half he lay quiet, listening for any sign of the U-boat's intentions; then, at 1.30 p. m., he



From the *London Times* History

Destroyer Summoned by a Blimp Sinks a Submarine

An artist's drawing to illustrate the employment of air-craft as submarine scouts.

boat had entirely disappeared; there were no survivors. Next day, after dark, *E-54's* time being up, she returned to her base, having had a full taste of despair and triumph.

READY FOR A LIGHTNING SHOT

"Earlier in the year, Lieutenant Bradshaw, in *G-13*, had had a somewhat similar experience. He went out to a distant patrol in cold March weather and had not been on the ground five hours when his adventures began. At 11.50 a. m. he was blinded by a snow-squall; and when he emerged from it, he immediately sighted a large hostile submarine within shot. Unfortunately the U-boat sighted *G-13* at the

same moment, and the two dived simultaneously. This, as may easily be imagined, is one of the most trying of all positions in the submarine game, and so difficult as to be almost insoluble. The first of the two adversaries to move will very probably be the one to fall in the duel; yet a move must be made sooner or later, and the boldest will be the first to move.

"Lieutenant Bradshaw seems to have done the right thing both ways. For an hour and a half he lay quiet, listening for any sign of the U-boat's intentions; then, at 1.30 p. m., he

A LONG SHOT IN ROUGH WATER

"At 3.55 p. m., a large U-boat came in sight, steering due west. Lieutenant Bradshaw carried out a rapid dive and brought his tubes to

the ready courses and speeds as requisite for attack.

"The maneuvering which followed took over half an hour, and must have seemed interminably long to every one in *G-13*. At 4.30 the enemy made the tension still greater by altering course some 35 degrees. It was not until 4.49 that Lieutenant Bradshaw found himself exactly where all commanders would wish to be, eight points on the enemy's bow. He esti-

of buoyancy, and it was not surprising that there were no survivors to pick up. The only relics of the U-boat were some pieces of board from her interior fittings."

TWO "SUBS" IN A DEATH GRAPPLE

IN one instance two submarines caught sight of each other and charged like old time knights. The British vessel was the *E-50*. According to Sir Henry Newbolt:

"The British commander drove straight at the enemy at full speed, and reached her before she had time to get down to a depth of complete invisibility. *E-50* struck fair between the periscopes; her stem cut through the plates of the U-boat's shell and remained embedded in her back. Then came a terrific fight, like the death-grapple of two primeval monsters. The German's only chance, in his wounded condition, was to come to the surface before he was drowned by leakage; he blew his ballast tanks and struggled almost to the surface, bringing *E-50* up with him. The English boat countered by flooding her main ballast-tanks and weighing her enemy down into the deep. This put the U-boat to the desperate necessity of freeing herself, leak or no leak. For a minute and a half she drew slowly aft, bumping *E-50's* sides as she did so; then her effort seemed to cease, and her periscopes and conning-towers showed on *E-50's* quarter. She was evidently filling fast; she had a list to starboard and was heavily down by the bows. As she sank, *E-50* took breath and looked to her own condition. She was apparently uninjured, but she had negative buoyancy and her forward hydroplanes were jammed, so that it was a matter of great difficulty to get her to rise. After four strenuous minutes she was brought to the surface, and traversed the positions, reaching for any further sign of the U-boat or her crew. But nothing was seen beyond the inevitable lake of oil, pouring up like thick, rank, life-blood of the dead sea-monster."



© Underwood and Underwood.

Captain Paul Koenig of the *Deutschland*

imated the U-boat's speed at eight knots, allowed 18 degrees' deflection accordingly, and fired twice. It was a long shot in rough water, and he had nearly a minute to wait for the result. Then came the longed-for sound of a heavy explosion. A column of water leapt up, directly under the U-boat's conning-tower, and she disappeared instantly. Ten minutes afterward, *G-13* was on the surface, and making her way through a vast lake of oil, which lay thickly upon the sea over an area of a mile. In such an oil-lake a swimmer has no margin

VOYAGE OF THE *DEUTSCHLAND*

ON July 9, 1916, there arrived in Baltimore the first submarine vessel of commerce. As the undersea vessel is ideal for running blockades, it occurred to some shipping men in Germany that it might be profit-

able to build a submarine simply to carry cargo, and in this way offset the threat of the British blockade. The first fruit of this idea was the *Deutschland*, a submersible, 315 feet long, 30 feet wide, and constructed to carry a cargo of 1,000 tons, with a crew of 29 men. She is said to have cost a half million to build, but according to the Germans her cargo of dyestuffs paid for the whole venture. The following statement of Captain Koenig, formerly commander of a North German Lloyd liner, gives an interesting picture of the German hopes based on this remarkable expedition:

"The submarine *Deutschland*, which I have the honor to command, is the first of several submarines built to the order of the Deutsche Ozean Rhederei G. M. B. H., Bremen. She will be followed by the *Bremen* shortly.

"The idea of the building of this submarine emanated from Alfred Lohmann, then President of the Bremen Chamber of Commerce. He brought his idea in the fall of last year confidentially before a small circle of friends, and the idea was taken up at once. A company was formed under the name of 'Deutsche Ozean Rhederei G. M. B. H.,' and the Germaniaerft, Kiel, was intrusted with the building of the submarines.

"We have brought a most valuable cargo of dyestuffs to our American friends, dyestuffs which have been so much needed for months in America and which the ruler of the seas has not allowed the great American Republic to import. While England will not allow anybody the same right on the ocean because she rules the waves, we have, by means of the submarine, commenced to break this rule.

"Great Britain cannot, however, hinder boats such as ours to go and come as we please. Our trip passing Dover across the ocean was an uneventful one. When danger approached we went below the surface, and here we are, safely in an American port, ready to return in due course.

"Our boat has a displacement of about 2,000 tons and a speed of more than fourteen knots. Needless to say that we are quite unarmed and only a peaceful merchantman. . . .

"Our boats will carry across the Atlantic the mails and save them from British interruption. We trust that the old friendly relationship with the United States, going back to the days of Washington, when it was Prussia who was the first to help America in its fight for freedom from British rule, will awake

afresh in your beautiful and powerful country."

Captain Koenig on his arrival at Baltimore gave a vivid account of his experiences on this remarkable voyage which will be found in Vol. X, dealing with heroic deeds and adventures.

ELUDES THE BRITISH GUARD SHIPS

The most ticklish experience of the expedition was the passage out (August 1st) from



The German Submarine *Deutschland*

Which made the undersea trip from Germany to the United States and back early in the war.

the mouth of the Chesapeake on the return voyage. He knew that the British guard ships would leave nothing undone to trap or destroy the *Deutschland* beyond the three-mile limit. Of this Captain Koenig says in his book *The Voyage of the Deutschland*:

"We knew that the most dangerous moment of our entire voyage was now approaching. We once more marked our exact position, and then proceeded to make all the preparations necessary for our breaking through.

"Then we dived and drove forward. All

our senses were keyed to the utmost, our nerves taut to the breaking-point with that cold excitement which sends quivers through one's soul, the while outwardly one remains quite serene, governed by that clear and icy deliberation which is apt to possess a man who is fully conscious of the unknown perils toward which he goes. . . .

"We knew our path. We had already been informed that fishermen had been hired to spread their nets along certain stretches of the three-mile limit; nets in which we were supposed to entangle ourselves; nets into which devilish mines had very likely been woven. . . .

"Possibly these nets were merely attached to buoys which we were then supposed to drag along after us, thus betraying our position. . . .

"We were prepared for all emergencies, so that in case of extreme necessity we should be able to free ourselves of the nets. But all went well.

"It was a dark night. Quietly and peacefully the lighthouses upon the two capes set forth their light, the while a few miles further out death lay lowering for us in every imaginable form.

"But while the English ships were racing up and down, jerking their searchlights across the waters and searching again and again in every imaginable spot, they little surmised that, at times within the radius of their own shadows, a periscope pursued its silent way, and under this periscope the *U-Deutschland*.

"That night at twelve o'clock, after hours of indescribable tension, I gave the command to rise.

"We Had Broken Through!"

Before the end of August the *Deutschland* was safely back in her berth again. On October 10th she left Germany for a second trip. After a stormy crossing she arrived in New London on November 2nd with a cargo of dyestuffs, drugs, and gems. Her sister ship, the *Bremen*, went down on her maiden trip, and although the *Deutschland* succeeded in going and returning safely for the second time, apparently the costs and the risks were considered too heavy to make this method of running the blockade a paying venture, for there were no other such voyages made. The high hopes expressed by Captain Koenig in his statement to the American press were therefore never realized. Nevertheless the work of the *Deutschland* was no small

achievement, and it may have a greater significance for the future than it had in the Great War just past. It proved, at any rate, that a blockade has few terrors for a submarine.

U-53 AT WORK OFF NANTUCKET

ANOTHER transatlantic voyage by a submarine was performed by the *U-53*, which suddenly appeared in Newport harbor on October 7, 1916. After a stay of only three hours, during which dispatches were sent to Ambassador von Bernstorff, the *U-53* returned to the high seas. Just what the purpose of this visit was was not made clear. Possibly it was intended as an object lesson and warning to the American people that if they persisted in their hostility to unlimited submarine warfare they might have submarines attacking their own coasts. At any rate, after reaching the ocean southeast of Nantucket the following morning she resumed "business as usual." Five steamers fell victim to her shell guns, three British, one Dutch, and one Norwegian. The crew of the British freight steamer *Strathend* were rescued by the Nantucket shoals lightship; the crews of the others were taken from the boats by two American destroyers that hurried to the scene on news of what the *U-53* was doing.

Whatever effect was intended by the visit of this submarine, the general feeling was a revulsion against the American position of neutrality which permitted or compelled our men-of-war to stand tamely by while a submarine sent the vessels of friendly nations to the bottom without the faintest regard to the fate of their crews. In short, American destroyers were useful only to mop up after the dirty work was done.

As for the threat suggested by the *U-53*, the *U-117*, a large mine-laying submarine, crossed the Atlantic and operated off the coast of America during the summer of 1918. She sank a number of vessels, chiefly small fishing schooners, and laid a number of mines, on one of which the cruiser *San Diego* was wrecked; but the military effect of her operations amounted to nothing whatever. At the end of the war the *U-117* was brought to this country by an American crew and exhibited as a trophy.

SUBMARINE PIRACY

The Sinking of the *Lusitania* and Other Chapters of Germany's Ghastly Career of Murder on the High Seas

THE exploits of submarine commanders in the war, wonderful as they have been, stand in almost total eclipse by the career of crime for which the Germans were responsible. The U-boat made a record of atrocities equaled by nothing in civilized warfare since the days of Alva. As the Germans in their dealings with Belgium attempted to substitute the rule of might for international law and common humanity on land, so by their use of the submarine they tried to substitute their own will for international law and common humanity on the sea. This became the real issue of the war, even in the eyes of most neutrals, and it was this that transformed the United States from a passive spectator into a formidable opponent.

The Germans began early with their use of the submarine in contempt of the usages of war as defined by international law. Because it was inconvenient and dangerous for a submarine to stop and search a vessel suspected of carrying contraband of war, and impracticable to take any large number of prisoners on board, the U-boats began a policy of sinking without warning and carried it to a point where no neutral vessel was safe and where the survivors in open boats were shelled to satisfy apparently a sheer lust for blood.

On October 26, 1914, a U-boat without warning torpedoed a French steamer, the *Amiral Ganteaume*, thirty of whose passengers and crew were lost. More attacks of this character followed during the rest of the year, and on February 3, 1915, the German Government issued their proclamation to the effect that "all the waters around Great Britain and Ireland, including the whole of the English Channel," was a "war zone," and that after February 18th Germany would attempt to destroy "every ship found in that war zone, without its being always possible

to avoid the danger that will thus threaten neutral persons and ships." Neutrals therefore were warned that "it would be well for their ships to avoid entering this zone, for although the German naval forces are instructed to avoid all violence to neutral ships in so far as these can be recognized, the order given by the British Government to hoist neu-



© Klafferautsch, Berlin.

"The Bathing Season of 1915"

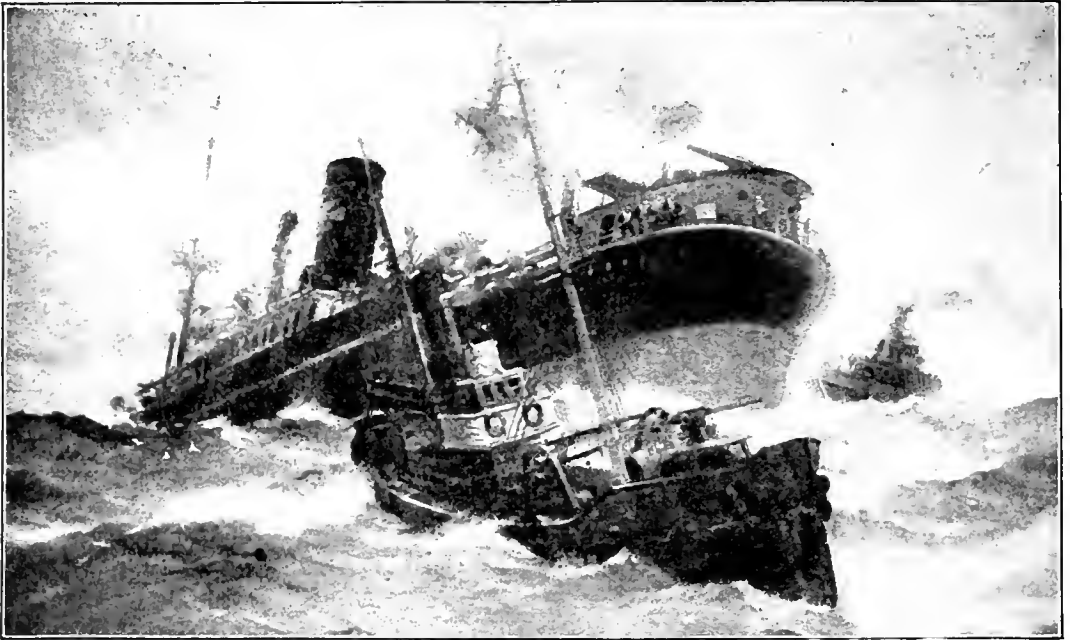
tral flags and the contingencies of naval warfare might be the cause of these ships becoming the victims of an attack directed against the vessels of the enemy." In short, if neutrals got hurt in this part of the high seas, as they were liable to be, they would have only themselves to blame. The American Government instantly repudiated this assumption on the part of Germany, and there

began the controversy which ended with American participation in the war.

The legal points of this issue between Germany and the United States are discussed elsewhere in this volume. Suffice it here to follow the instances and the means by which the Germans attempted to have their way on the high seas. On May 1, 1915, the first American ship victim, the *Gulflight*, was sunk, but already, on March 28th, the British

utes to take to the boats, but before this time had elapsed fired a torpedo, with the result that out of the 237 persons on board 101 were drowned. A dispatch to the New York *Sun* gives the story of one of the survivors:

"The *Falaba* was steaming between ten and twelve knots when the submarine was sighted, but was soon making fourteen knots. I watched the submarine gradually come above the water, and as it did so a gun appeared above her



From the *London Times History*.

Hidden Perils of the Deep in the Heyday of German Piracy

Tugs are attempting to salvage a merchantman torpedoed by a German submarine. In some cases disabled ships reached port, but the toll of British sinkings due to submarine attacks aggregated 6,635,059 tons, and in one month in 1917 reached 800,000 tons (total for Allies). The British loss of life was 14,237.

passenger steamer *Falaba* had been sent to the bottom with the loss of life on the part of an American citizen, Leon C. Thrasher, and on April 28th the American vessel *Cushing* had been attacked by a German aeroplane.

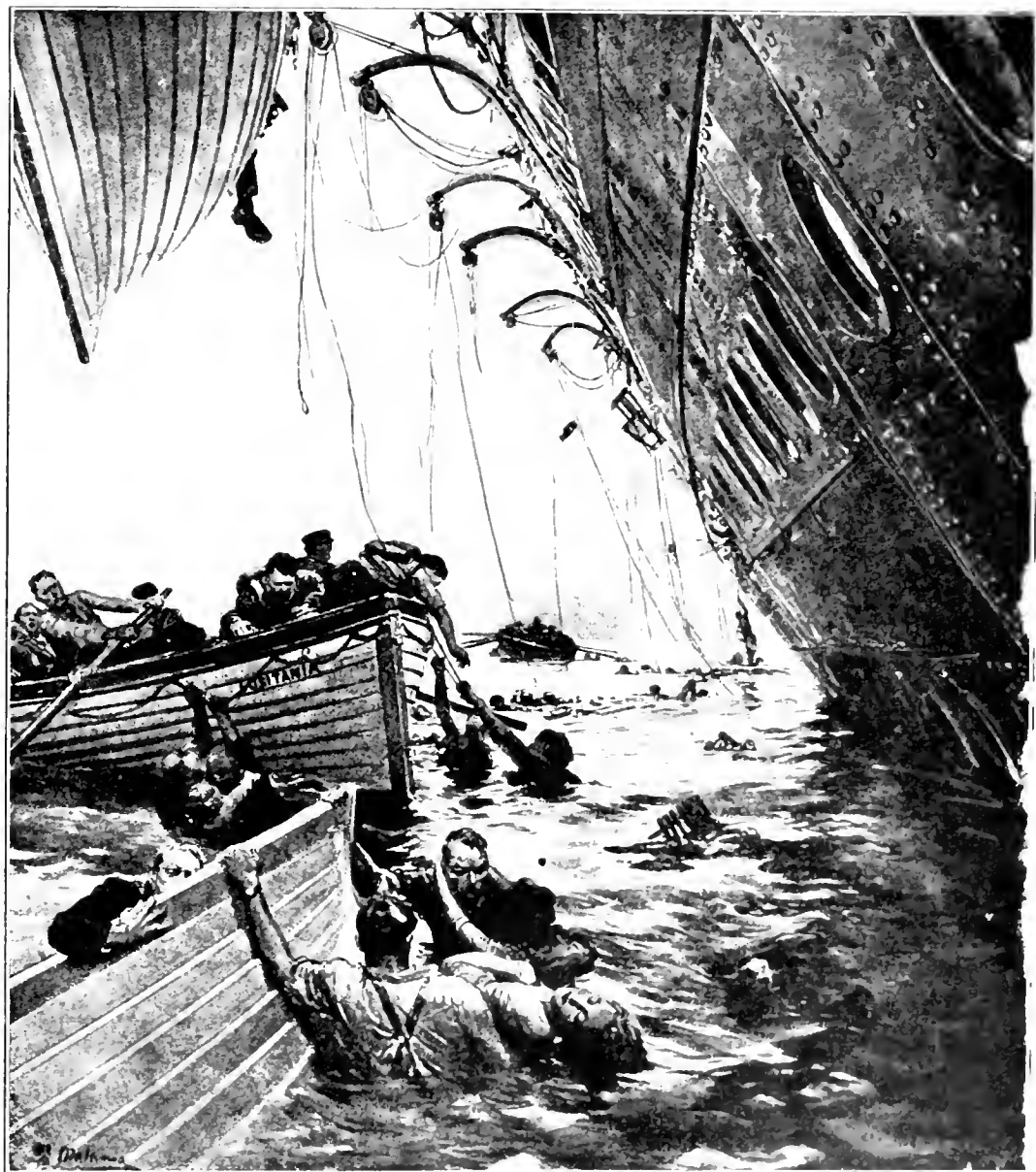
THE *FALABA*; 101 LIVES LOST

THE story of the *Falaba* is a fair example of the spirit and the methods of U-boat captains applied to noncombatants on the seas. The commander of the U-28, which made the attack, allowed the passengers five min-

utes to take to the boats, but before this time

had elapsed fired a torpedo, with the result that out of the 237 persons on board 101 were drowned. A dispatch to the New York *Sun* gives the story of one of the survivors: "The *Falaba* was steaming between ten and twelve knots when the submarine was sighted, but was soon making fourteen knots. I watched the submarine gradually come above the water, and as it did so a gun appeared above her deck. All the passengers gathered on the deck. "We stood on the starboard side, watching the submarine overhaul us—we did not think she would blow us up—one or two making bets whether she would or not. There was not the slightest panic even when, at about fifty yards, she ordered us to stand by. As she came up our wireless man sent out the message: '*Falaba* torpedoed; taken to boats,' and gave our position. I believe the message was received at Land's End, but the submarine interrupted with her wireless and ordered us not to send any more messages. As a matter of fact we had not been torpedoed then.

"The captain ordered us to the boats. About



The Tragedy of the *Lusitania*

Aside from the human issue involved, the sinking of the *Lusitania* has been called the greatest diplomatic blunder of the war.

twenty men got into the first boat, but directly after it touched the water it capsized and the men were thrown into the sea. Three other boats got off, the last just touching the water when the submarine let go a torpedo at us. It struck right under my boat, which was blown to pieces, while the *Falaba* went down head first in less than five minutes.

"One of the other boats came back and picked me up. Soon afterward the *Eileen* came and took us aboard. All this while the submarine was standing by and watching us struggle in the water. They did not attempt to help us, but some of the crew gathered on deck and jeered at us. All of a sudden the submarine submerged and disappeared.

"She was a tremendous boat, quite the largest I have ever seen. She did not have any number showing; at least, I did not see any number, and I saw both sides of her."

TORPEDOING OF THE *LUSITANIA*

THESE preliminary outrages, however, were dwarfed into insignificance by the sinking of the Cunard steamer *Lusitania*, on May 7, 1915. This was one of the largest and finest liners in the world—785 feet long and of 32,500 tons, with a speed of 26 knots. She left New York on her regular mail and passenger service, despite a warning advertisement published in the newspapers by German officials. Few believed that Germany would so utterly violate the rules of civilized warfare as to order the destruction of this ship. Nevertheless, while she was running a few miles southwest of Kinsale Head, Ireland, about 2:15 in the afternoon, she was suddenly and without warning struck by a torpedo, and in eighteen minutes she had sunk. Out of 1,959 persons on board, 1,198 were killed by the explosions or drowned, and 124 of these were American citizens. (For the official report of the investigation into the sinking of the *Lusitania*, see Volume I.)

AN EYE-WITNESS' ACCOUNT

The New York *Tribune* printed the following story of a passenger who saw the torpedo strike:

"There was a heavy fog early on Friday morning. I was awakened about seven o'clock by the blowing of the siren. The passengers

all commented on it and said it was likely to attract a submarine if there were any in the neighborhood.

"About noon the ship turned northward from the course she had been holding, making a huge semicircle and heeling well over to port. We had no information why this was done, but at the time we wondered if news of a submarine had been received.

"I was on deck on the starboard side aft about 2 p. m., talking with Mr. Bloomfield, of New York, and Mr. Deerberg, of London, when we saw what looked like a whale or a porpoise rising about three-quarters of a mile to starboard. We all knew what it was, but no one named it.

"Immediately a white line, a train of bubbles, started away from the black object. No one spoke until it was about sixty yards away from the submarine, then Deerberg said, 'It looks like a torpedo.' Bloomfield said, 'My God! it is a torpedo!'

"It came straight for the ship. It was obvious it couldn't miss. It was aimed ahead of her and struck under the bridge. I saw it disappear. Practically I saw it strike, but as it disappeared we all hoped for the fraction of a second it would not explode.

"But the explosion came clear up through the upper deck, and pieces of the wreckage fell clean aft of where we were standing. We ducked into the smoking-room for a few seconds for shelter from the flying débris.

"There was no second torpedo, but the boilers exploded immediately. The passengers all rushed at once to the high side of the deck—the port side. There was such a list to starboard that all boats on the port side swung right back inboard and could not be launched. Passengers who got down to starboard did the work of launching there.

"The first boat dropped clear of the ship with no one in it. One man jumped from the deck and the boat drifted away with that one man in it. Several other boats followed, and most of the people on that side got in them.

"Every one was frightened, but there was no panic. The second-class passengers swarmed over on to the first-cabin deck, and that helped to make the lack of life-preservers. The *Lusitania* listed to starboard and settled down on that side, also by the head, and as I went over the side and was dragged into a small boat it looked as though its smokestack was going to hit us. But then the ship straightened up and rolled back to port and sank rapidly, bow first.

"There was no suction. One boat full of

people on each side was overturned. Another was swamped, and the davits caught one.

"I think so much life was lost because the people rushed to the high side and seemed afraid to come down and jump into the water, where they might have been picked up. The officers were all cool and each one was at quarters. The stewards showed the greatest bravery, and one of them took in at least eight men and two women."

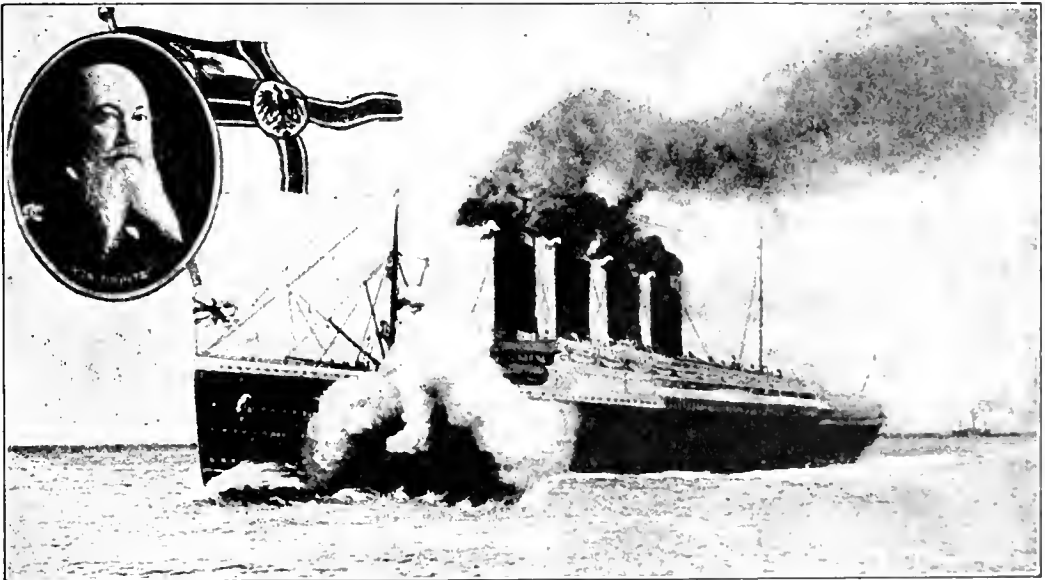
HOW THE *LUSITANIA* WENT DOWN

Another passenger, Charles E. Lauriat, Jr., of Boston, described the last moments of the

muffled sound, but the good ship trembled for a moment under the force of the blow; a second explosion quickly followed, but I do not think it was a second torpedo, for the sound was quite different; it was more like a boiler in the engine room.

"Remember that I was standing well for'ard on the port side, and consequently looked back at the scene of the explosion, at an angle across to the starboard side; therefore, although the debris showed between the second and third funnels I think the blow was delivered practically in line with the fourth funnel.

"I looked immediately at my watch and it was exactly eight minutes past nine (a. m.)



"A Great Naval Victory"

A reproduction of the *Lusitania* picture post-card which was very popular in Germany.

Lusitania in his book *The Lusitania's Last Voyage* (Houghton, Mifflin & Co.), as follows:

"After lunch I went to my stateroom and put on my sweater under the coat of the knickerbocker suit that I was wearing and went up on deck for a real walk. I came up the main companion-way and stepped out on the port side of the steamer and saw Mr. and Mrs. Elbert Hubbard standing by the rail, a little for'ard of the entrance. I joined them and was conversing with them when the torpedo struck the ship. . . .

"Where I stood on deck the shock of the impact was not severe; it was a heavy, rather

Boston time, which means eight minutes past two, Greenwich time. . . .

"I turned and walked for'ard toward the bridge, and Captain Turner and Captain Anderson were both calling in stentorian tones not to lower away the boats, . . . saying that there was no danger and that the ship would float. . . . I had been watching carefully the list of the steamer, and by now I was confident that she wouldn't float and that the end was coming fast. . . .

"I spoke to several and urged them to come; but truly they were petrified, and only my tramping from boxhood up, in the water and under it, gave me the courage to jump. I swam about 100 feet away from the ship and then

turned around to see if anyone was following. . . . Also I wanted to see when the final plunge of the steamer came, that I might be the more ready to fight against the vortex and tell the others. The *Lusitania* did not go down anything like head first: she had, rather, settled along her whole water line. . . . The stern did not rise to anything like a perpendicular, nor did it rise so high that I could see a single one of the propellers or even the end of her rudder. Not one of her funnels fell.

"There was very little vortex; there was rather a shooting out from the ship instead of a sucking in, after she sank; this I am told was partly caused by the water rushing into her funnels and being blown out again by explosions made by the mixing of the cold water

call out, 'Here's a torpedo.' I ran over to the other side and saw clearly the wake of the torpedo. Smoke and steam came up between the two last funnels, and there was a slight shock. Immediately after the first explosion there was another report, but that might possibly have been internal.

"She floated about eighteen minutes after the torpedo struck her. No warship was conveying us. I saw no warship; none was reported to me as having been seen. Eighteen knots was not the normal speed of the *Lusitania*. At ordinary peace times she could make twenty-five knots, but in war time her speed was reduced to twenty-one knots. My reason for going eighteen knots was that I wanted to arrive at Liverpool Bar without stopping,



The Medal to Commemorate the Sinking of the *Lusitania* on May 7, 1915

Note that it is dated May 5th.

of the sea with the steam of the boilers. I saw an interesting statement in one of the papers, purporting to have come from Captain Turner, in which he stated that the small amount of suction was probably due to the fact that the bow of the boat was already resting on the bottom when the stern went down. This seems quite feasible, as she sank in about 60 fathoms (360 feet) of water and she was 755 feet long."

CAPTAIN TURNER'S STORY

At the inquest held in England on May 10th Captain Turner, who was in command of the *Lusitania*, testified as follows:

"The weather was clear, and we were going at a speed of eighteen knots. I was on the port side, and I heard the second officer, Hefford,

and within two or three hours of high water. Double look-outs were kept for submarines, but we were not going a zigzag course. It was bright weather, and the land was clearly visible. It was quite possible for a submarine to approach without being seen."

From the foregoing testimony it is clear that Captain Turner had not taken the submarine menace to his ship very seriously. Although he received a wireless from shore warning him of the presence of submarines, his ship was not put on a zigzag course; on the contrary she was slowed down to eighteen knots in order to reach Liverpool Bar at a convenient hour of the tide. Nor, for that matter, had the British government taken any precautions to make the homecoming of the liner safe. The fact seemed to be that

TAKE UP THE SWORD OF JUSTICE



Remember the *Lusitania*

no one was ready to believe that a cold-blooded massacre like the sinking of the *Lusitania* could be planned and executed by any people that called themselves civilized.

A "GREAT NAVAL VICTORY" FOR GERMANY

The actual perpetration of the horror was a violent shock to the whole world, especially to the United States, whose citizens to the number of 124 had been foully murdered. It was a further revelation of the German mind to learn of the universal rejoicing over the "great naval victory," the sale of picture postals celebrating the event, and the striking of a *Lusitania* medal, executed in fact even before the actual sinking took place.

For the United States the outrage became the subject of a long drawn out and unsatisfactory exchange of diplomatic notes with the German government. Meanwhile the U-boat attacks on merchant ships continued. The great White Star liner *Arabic* was sunk (August 19, 1915) without warning, and the channel steamer *Sussex* underwent the same fate (March 24, 1916).

On April 20, 1916, President Wilson sent a note threatening immediate rupture of diplomatic relations unless the policy of attacking unarmed merchantmen without warning and without giving opportunity of saving the personnel were abandoned. For the time being Germany yielded; meanwhile submarines were built with all speed against the day when there would be so many to operate on the seas that neutral protests might be disregarded. On January 31, 1917, the German government issued its famous memorandum announcing a forbidden zone in waters surrounding their enemies' coasts, a zone in which no neutral might hope for mercy. This led to the severance of diplomatic relations between the United States and Germany and subsequently war.

Details of the submarine issue between the two governments are taken up in Part II of Volume I. The province of these pages is to reproduce such narratives of survivors as will serve to give a realization of just what this policy of "ruthlessness" meant to those who experienced it. That this policy was effective in a naval sense was obvious, but its moral effect led to the Central Powers' defeat.

LOSS OF THE *ANCONA*

THE attack on the Italian passenger ship *Ancona* on November 8, 1916, was carried out by an Austrian submarine while supposedly the Central Powers were fulfilling their pledge to give due warning and ample time for passengers and crew to take to the boats. A brief Reuter dispatch from a survivor suggests the horror of what actually occurred:

"We left Naples with a fairly large number of passengers, intending to sail direct to New York, but soon after leaving port we received a wireless message directing us to stop at Messina for more passengers and cargo. The people aboard were mostly Greeks and Italians, with large families, on their way to the United States to settle there. The majority, therefore, were women and children.

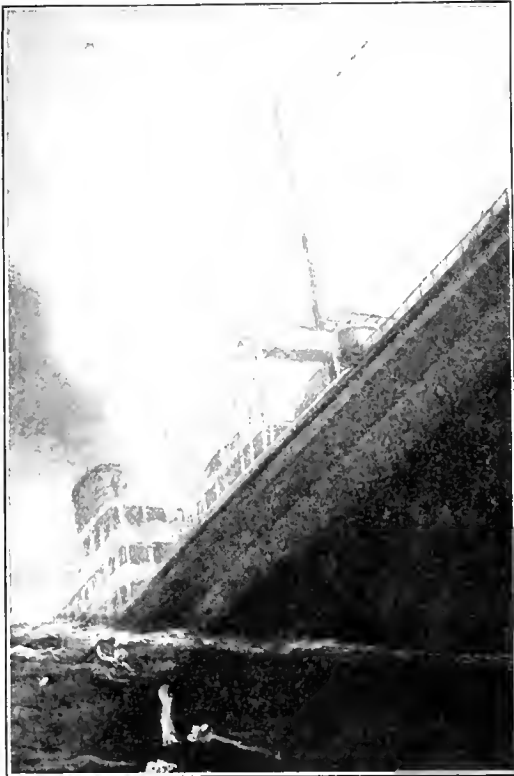
"We left Messina at 5 p. m. The captain, having been warned of the presence of enemy submarines, took all possible precautions. At exactly one o'clock Monday afternoon [November 8th] we sighted an enemy submarine at a great distance. She came to the surface and made full speed in our direction, firing as she did so a shot which went wide across our bow. We took this to be a warning to halt.

"Immediately there was the wildest panic aboard, not only among the women and children, but among the men as well. Women screamed and children clung desperately to their mothers. Meanwhile the submarine continued to shell us, gaining rapidly. The fifth shot carried away the chart-house.

"The engines then were stopped and the *Ancona* came slowly to a standstill. The submarine, which we could see plainly was an Austrian, came alongside. We heard the commander talking to our captain. In a somewhat curt manner we were told that the Austrian had given us a few minutes to abandon the ship. Meanwhile the submarine withdrew a little distance.

"We turned to the boats, which began to be lowered without loss of time, but the passengers were in a pandemonium. Men, women, and children seemed to lose their heads completely. The submarine, presumably to accelerate our departure, continued to fire around the vessel. There was a rush for the first boats lowered, and in the confusion these were overturned before they were free from the davits, the occupants falling into the water. Many were drowned before our eyes.

"The shrieks of women, children, and struggling men rent the air, but it seemed no help could be given. Every one was trying to act for himself. The heartrending screams were punctuated with shot after shot, delivered almost mechanically from the deck of the submarine, adding to the panic aboard. Had it not been for these shots it might have been possible to restore a semblance of order. The conduct of the submarine was incomprehensible. Not one shot was directed at the ship, but they



The Sinking of the *Arabic*

were fired all around the vessel as if to create as much terror as possible.

"About eight boats got away clear, some with a fair complement aboard; others half empty. All drifted away from one another."

THE *PERSIA* GOES DOWN BOW IN THE AIR

A SIMILAR experience in suffering, but with better discipline among passengers and crew, is seen in the story of another victim, the *Persia*, of the P. & O. line, also

sunk in the Mediterranean, on December 30, 1915. Among those who lost their lives in this attack was an American consul, Robert McNeely, whose safe conduct had been guaranteed by the Teuton governments. The account of another American passenger, as given to the Associated Press, runs in part as follows:

"I was in the dining-room of the *Persia* at 1.05 p. m. I had just finished my soup and the steward was asking what I would take for my second course when a terrific explosion occurred. The saloon became filled with smoke, broken glass, and steam from the boiler, which appeared to have burst. There was no panic on board. . . .

"As the vessel was then listing so badly that it was impossible to launch the starboard boats, I slid down the starboard rail into the water. I got caught in a rope which pulled off a shoe, but I broke loose and climbed on some floating wreckage, to which I clung.

"The last I saw of the *Persia* she had her bow in the air, five minutes after the explosion. After floating on the wreckage until four o'clock in the morning I saw five boats. I was pulled into one of them. . . .

"We rowed for three hours. Then we saw a cruiser and called out, 'We are English.' We explained that we were survivors of the *Persia* and gave directions to the cruiser as to where the other boats were. They were soon found and the occupants were taken off immediately by the English sailors."

DEATHS IN THE LIFEBOAT

Another survivor, an Englishman, was carried down with the sinking ship three minutes after she was struck. A life-saving waistcoat which he wore brought him up to the surface in the midst of struggling and drowning men. With difficulty he swam to an upturned boat and dragged himself upon it. The rest of his experience may be given in his own words from the story as it appeared in the *Philadelphia Public Ledger*:

"Twenty-six persons wearing life-preservers of some kind eventually caught hold of the cap-sized boat, but several of these were too weak to hold on. A big wave occasionally knocked us all off. One of these righted the boat, and nineteen of us managed to scramble into it. She had a hole in her bottom, so that she barely floated.

"All the afternoon was spent in this precarious situation. Several times we were swept by great waves out of the boat, and I owe my life to Alexander Clark, a Scotch second-class passenger, who helped me to climb back into the boat once when I was so exhausted that I could not have survived without aid.

"Before the night was gone two of the survivors died from exhaustion. As their bodies were washed about in the boat, we finally threw them overboard. The night seemed interminable. At dawn the next morning there were eleven left in the boat. We saw a two-funneled steamer several miles away, and hoisted a piece of torn flag on the one oar left in the boat. But the steamer passed westward within three miles. The rest of the day we saw nothing. The sun in the middle of the day became very hot. The second night was very cold.

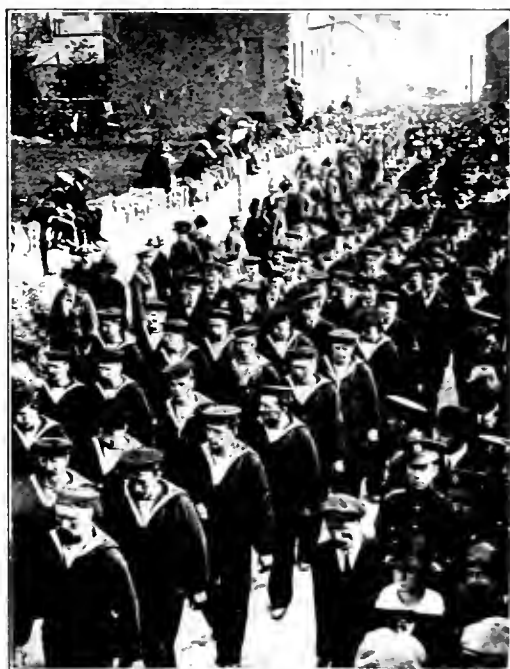
WITHOUT FOOD FOR 36 HOURS

"I think we all during that night gave up hope of being saved. My Scotch friend remarked philosophically as the sun went down, 'I guess that's the last sunset we shall ever see.' We both found it a great struggle to keep awake. The tendency to drowsiness was almost irresistible, but to fall asleep we all knew meant the end. We capsized once more during the night. One of my fellow sufferers yielded to the temptation to drink salt water, as we had all been without food for thirty-six hours. He promptly went out of his head.

"Just before dawn of the second morning we saw the masthead-lights of a steamer far away to the eastward. I thought at first it was a star. Presently I discovered her sidelights, which showed that she was coming nearly straight for us. When she got closer we started shouting in unison. I led the others by calling 'one, two, three!' shouting when the ship was half a mile away. She ported her helm, stopped her engines, and appeared to be listening. We knew then that, like other ships, she suspected a ruse and dared not approach. After some time she came nearer. Then her steam-whistle was blown. If you ever have known what it was to escape from the very jaws of death you know how we felt. The ship proved to be the Alfred Holt steamer *Nedg Chow*, Captain Allen, bound from China for London. We had to be lifted on board like inert sacks, with ropes tied under our arms."

If such deliberate barbarity as the sinking of the *Ancona* and the *Persia* was possible

while the *Sussex* pledge was still supposed to bind Germany and her allies, it is not surprising that after the proclamation of ruthless submarine warfare the U-boat captains stopped at nothing in the line of savagery. Belgian Relief ships, bearing safe conduct from the German government itself, even hospital ships, were the victims of attack, and, as a last touch of brutality, survivors in open



© Underwood and Underwood.

Funeral of *Lusitania* Victims

boats were actually shelled, or if taken on board were drowned from the deck of the submarine itself.

LACONIA TORPEDOED AT NIGHT

ANOTHER Cunard liner, the *Laconia*, suffered the fate of the *Lusitania*. She was torpedoed off the Irish coast about 10:30 in the evening of February 25, 1917, having been spotted by a submarine's searchlight. The scene is thus pictured in a dispatch to the *New York Times*:

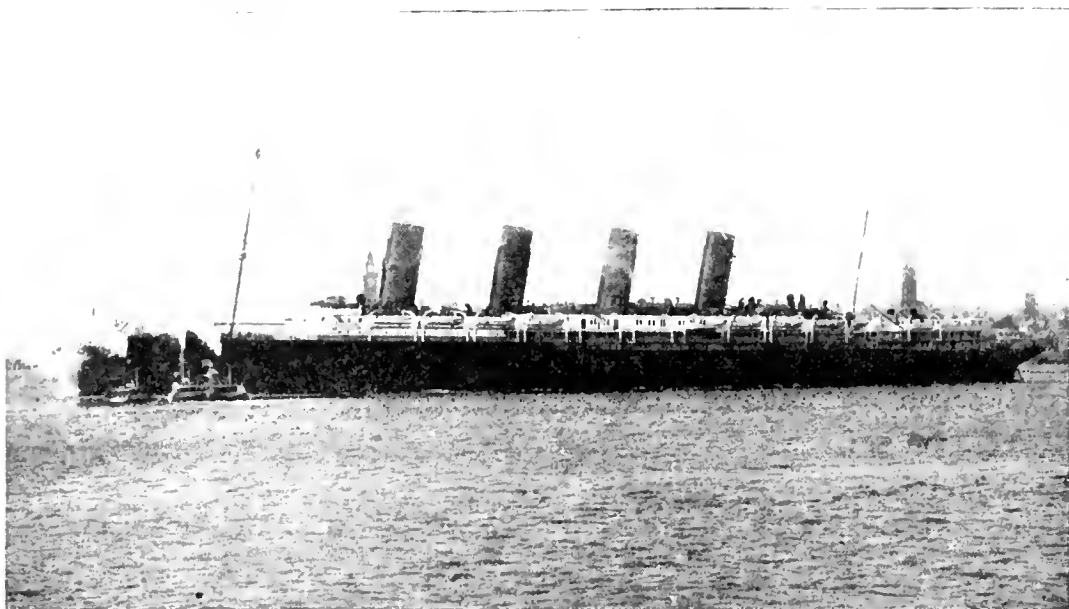
"The last dinner of the voyage was over and some of the women had already turned in and were actually in bed. In the smoke-room

men were playing auction bridge. Half a dozen children were romping in the saloon. The *Laconia* was showing no lights and keeping a sharp lookout.

"Immediately following a glimpse of uninterrupted moonlight at about 9.15 o'clock the first torpedo crashed into the liner, hitting her well aft. There was no sign of the attacker

side began to fill, she slowly righted herself and lay on an even keel once more.

"The *Laconia* was sinking, but so slowly that the murderous U-boat, watching near by, bobbed up again close alongside and let fly another torpedo. Far amidships it crashed into the engine-room, and that was the end of the *Laconia*."



© Brown Bros.

The *Lusitania* Sailing On Her Fatal Voyage

She sailed from New York on May 1st with 1,959 persons on board. On that morning advertisements appeared in many newspapers over the signature of the German Embassy, warning neutrals to avoid British ships. She was torpedoed 10 miles from the rocky Irish coast and 28 miles from Queenstown. The loss of life was 1,198 killed or wounded, 124 being Americans.

and nobody even saw the shark-fin wake of the torpedo on its journey. The ship shivered under the blow. Everybody felt it and knew what had happened, but there was not the slightest panic on board.

"Captain Irvine instantly ordered the turning on of every light in the ship, and in half a dozen seconds the vessel was ablaze with electricity. The familiar boat-drill, practiced zealously every day by all on board, was repeated all over again as if it were a drill and no more. All the boats, fully equipped and provisioned, were swung out. As the ship began to settle down, the women and children were taken off first, and the rest of the passengers followed.

"A quarter of an hour after the ship had been struck she had listed heavily to starboard. Then, as the water-tight bulkheads on the port

A PASSENGER'S STORY

One of the passengers on the *Laconia* was Floyd P. Gibbons, of the *Chicago Tribune*. This is his story, cabled to this newspaper:

"The first-cabin passengers were gathered in the lounge Sunday evening, with the exception of the bridge fiends in the smoking-room. *Poor Butterfly* was dying wearily on the talking-machine and several couples were dancing.

"About the tables in the smoking-room the conversation was limited to the announcement of bids and orders to the stewards. This group had about exhausted available discussion when the ship gave a sudden lurch sideways and forward. There was a muffled noise like the slamming of some large door at a good distance away. The slightness of the shock and

the mildness of the report compared with my imagination was disappointing. Every man in the room was on his feet in an instant. I looked at my watch. It was 10.30.

"Then came five blasts on the whistle. We rushed down the corridor leading from the smoking-room at the stern to the lounge, which was amidships. We were running, but there was no panic. The occupants of the lounge were just leaving by the forward doors as we entered.

"It was dark when we reached the lower deck. I rushed into my stateroom, grabbed life preservers and overcoat and made my way quickly to the upper deck on that same dark landing.

"I saw the chief steward opening an electric switch box in the wall and turning on the switch. Instantly the boat decks were illuminated. That illumination saved lives.

STRUGGLE TO LAUNCH A LIFE-BOAT

"The illumination of the upper deck, on which I stood, made the darkness of the water, sixty feet below, appear all the blacker when I peered over the edge at my station boat, No. 10.

"Already the boat was loading up and men and boys were busy with the ropes. I started to help near a davit that seemed to be giving trouble, but was stoutly ordered to get out of the way and get into the boat. We were on the port side, practically opposite the engine well. Up and down the deck passengers and crew were donning lifebelts, throwing on overcoats, and taking positions in the boats. There were a number of women, but only one appeared hysterical. . . .

"The boat started downward with a jerk toward the seemingly hungry rising and falling swells. Then we stopped and remained suspended in midair while the men at the bow and the stern swore and tussled with the lowering ropes. The stern of the boat was down, the bow up, leaving us at an angle of about forty-five degrees. We clung to the seats to save ourselves from falling out.

"Who's got a knife? A knife! a knife!" bawled a sweating seaman in the bow.

"Great God! Give him a knife," bawled a half-dressed, gibbering negro stoker who wrung his hands in the stern.

"A hatchet was thrust into my hand, and I forwarded it to the bow. There was a flash of sparks as it crashed down on the holding pulley. Many feet and hands pushed the boat from the side of the ship and we sagged down

again, this time smacking squarely on the billowy top of a rising swell.

BEDLAM AND NIGHTMARE

"As we pulled away from the side of the ship its receding terrace of lights stretched upward. The ship was slowly turning over. We were opposite that part occupied by the engine rooms. There was a tangle of oars, spars and



Richards in the *Philadelphia North American*.

"I Dare You To Come Out!"

(Germany's chief naval weapon was the submarine preying on merchant ships; her fighting fleet remained in the home waters.)

rigging on the seat and considerable confusion before four of the big sweeps could be manned on either side of the boat.

"The gibbering bullet-headed negro was pulling directly behind me and I turned to quiet him as his frantic reaches with his oar were hitting me in the back.

"Get away from her, get away from her," he kept repeating. 'When the water hits her hot boilers she'll blow up, and there's just tons and tons of shrapnel in the hold.'

"His excitement spread to other members of the crew in the boat. It was the give-way of

nerve tension. It was bedlam and nightmare.

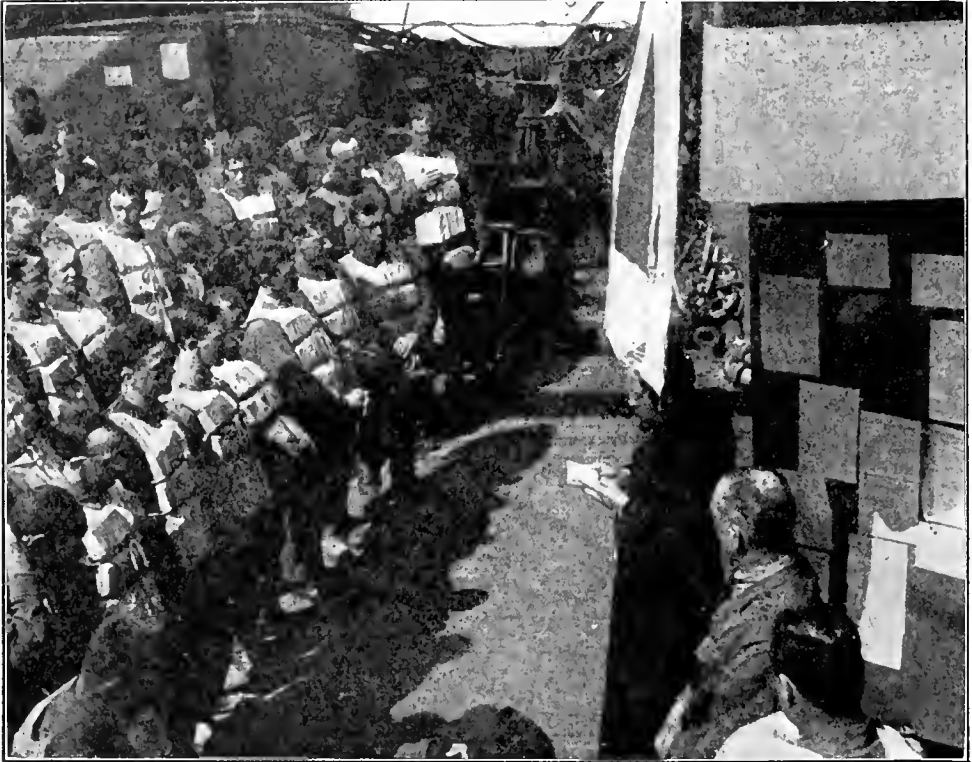
"We rested on our oars, with all eyes on the still lighted *Laconia*. The torpedo had struck at 10.30 p. m. It was thirty minutes afterward that another dull thud, which was accompanied by a noticeable drop in the hulk, told its story of the second torpedo that the submarine had dispatched through the engine room and the boat's vitals from a distance of two hundred yards.

"We watched silently during the next minute, as the tiers of lights dimmed slowly from

it slid silently down and out of sight like a piece of disappearing scenery in a panorama spectacle.

"VOT DID SHE WEIGH?"

"Boat No. 3 stood closest to the ship and rocked about in a perilous sea of clashing spars and wreckage. As our boat's crew steadied its head into the wind a black hulk, glistening wet and standing about eight feet above the surface of the water, approached slowly and came



Religious Service on a Troopship in the Submarine Zone

white to yellow, then a red, and nothing was left but the murky mourning of the night, which hung over all like a pall.

"A mean, cheese-colored crescent of a moon revealed one horn above a ragged bundle of clouds low in the distance. A rim of blackness settled around our little world, relieved only by general leering stars in the zenith, and where the *Laconia's* lights had shone there remained only the dim outlines of a blacker hulk standing out above the water like a jagged headland, silhouetted against the overcast sky.

"The ship sank rapidly at the stern until at last its nose stood straight in the air. Then

to a stop opposite the boat and not six feet from the side of it.

"'What ship was dot?' The correct words in throaty English with a German accent came from the dark hulk, according to Chief Steward Ballyn's statement to me later.

"'The *Laconia*,' Ballyn answered.

"'Vot?'

"'The *Laconia*, Cunard Line,' responded the steward.

"'Vot did she weigh?' was the next question from the submarine.

"'Eighteen thousand tons.'

"'Any passengers?'

"'Seventy-three,' replied Ballyn, 'men, women and children, some of them in this boat. She had over two hundred in the crew.'

"'Well, you'll be all right. The patrol will pick you up soon.' And without further sound save for the almost silent fixing of the conning tower lid, the submarine moved off.

"There was no assurance of an early pick-up, even though the promise were from a German source, for the rest of the boats, whose occupants—if they felt and spoke like those in my boat—were more than mildly anxious about their plight and the prospects of an early rescue.

"The fear of some of the boats crashing together produced a general inclination toward further separation on the part of all the little units of survivors, with the result that soon the small craft stretched out for several miles, all of them endeavoring to keep their heads in the wind.

A BRITISH SHIP TO THE RESCUE

"And then we saw the first light—the first sign of help coming—the first searching glow of white brilliance, deep down on the somber sides of the black pot of night that hung over us.

"It was way over there—first a trembling quiver of silver against the blackness; then, drawing closer, it defined itself as a beckoning finger, although still too far away yet to see our feeble efforts to attract it.

"We pulled, pulled, lustily forgetting the strain and pain of innards torn and racked from pain, vomiting—oblivious of blistered hands and wet, half frozen feet.

"Then a nodding of that finger of light—a happy, snapping, snap-shooting finger that seemed to say: 'Come on, you men,' like a dice-player wooing the bones—led us to believe that our lights had been seen. This was the fact, for immediately the coming vessel flashed on its green and red side-lights and we saw it was headed for our position.

"'Come alongside port!' was megaphoned to us. And as fast as we could we swung under the stern, while a dozen flashlights blinked down to us and orders began to flow fast and thick.

"A score of hands reached out, and we were suspended in the husky tattooed arms of those doughty British jack tars, looking up into the weather-beaten, youthful faces, mumbling thanks and thankfulness and reading in the gold lettering on their pancake hats the legend *H. M. S. Laburnum*."

FIVE BELGIAN RELIEF SHIPS SUNK

ON March 8, 1917, the Belgian Relief ship *Storstad*, carrying a cargo of corn, was fired upon by a U-boat. Immediately the captain of the steamer displayed the huge signboard bearing the words, "Belgian Relief." The Germans answered by torpedoing her. As the crew got into the boats the U-boat commander announced that he could



Ulk, Berlin.

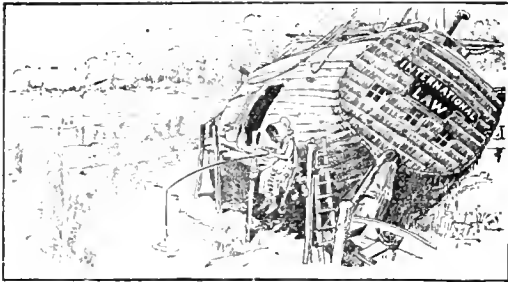
The *Lusitania* Method

"Don't be frightened, Mr. Jonathan; we won't shoot, but if the Germans kill you, we will protest again over the breaches of International Law."

not be bothered by towing them to a place of safety, and left them adrift in the open sea at the mercy of the March gales. They drifted for 36 hours, during which time a number of deaths from exposure occurred, before they were picked up.

The *Storstad* flew Norwegian colors, her crew were composed of neutrals, and her captain, in addition to the pledge of the German government respecting relief ships, carried a safe conduct given him by the German consul at Buenos Aires. It was also entirely to German interest to have food supplies reach

Belgium. Hence the act was sheer wanton barbarity. Nor was the *Storstad* the only victim of this class. The ruthless campaign had scarcely begun when the relief ship *Lars Kruse* was sent down. On April 4th the relief ship *Trevier* was sunk off Scheveningen and in the same week another, the *Camilla*. In the case of the former a shell was fired into the lifeboat as a finishing touch. Still later in the same month a fifth, the *Car-*



Bradley in *Chicago News*.

Interned—For the Duration of the War

netta, met the same fate. In all these cases official German "safe conducts" amounted to nothing with U-boat commanders.

ALNWICK CASTLE'S PASSENGERS LEFT IN AN OPEN BOAT 320 MILES FROM LAND

ONE of the most typical examples of submarine ruthlessness was the case of the mail steamer *Alnwick Castle*, which was torpedoed without warning on March 19, 1917, in the Atlantic, 320 miles from the nearest land, the Scilly Isles. She had in addition to her own passengers and crew the crew of another British ship which had been torpedoed and which she had rescued the day before. Both crews and passengers got into the six boats available. One of these boats, containing 29 people, reached the Spanish coast. Of these, eight had perished and the rest were in great suffering from cold and thirst. Of the experiences of this voyage some conception may be gained from the narrative of the *Alnwick Castle's* skipper, Captain Chave, as printed by the *Boston Transcript*:

'At a safe distance we waited to see the end of the *Alnwick Castle*.

"Then we observed the submarine quietly emerge from the sea end on to the ship, with a gun trained on her. She showed no periscope, just a conning tower and a gun as she lay there—silent and sinister.

"In about ten minutes the *Alnwick Castle* plunged bow first below the surface. Her whistle gave one blast and the maintopmast broke off. There were a smothered roar and a cloud of dirt and we were left in our boats, 139 people, 300 miles from land.

"The submarine lay between the boats, but whether she spoke to any of them I do not know. She proceeded N. E. after a steamer which was homeward-bound, about four miles away, and soon after we saw a tall column of water, etc., and knew that she had found another victim."

After seeing the end of their ship the boats made sail for the nearest land. After dark, however, they became separated and Captain Chave never sighted the other five again. As the wind and sea rose to such a violence that it was impossible to continue sailing, Chave rigged a sea anchor. During the night both that and the rudder were carried away, and another sea anchor had to be improvised and all the following day the crew toiled to keep the boat's head pointed up into the wind.

"We were constantly soaked with cold spray and pierced with the bitter wind, which was now from the north. I served out water twice daily, one dipper between two men, which made a portion about equal to one-third of a condensed-milk tin.

"Fortunately, I had made a practice of keeping in the boats a case of condensed milk, a case of beef, two tins of biscuits, and a skein of amberline, and some twine, and palm, and needle, besides the regulation equipment; also I had provided a bundle of blankets for each boat. We divided a tin of milk among four men once a day, and a tin of beef (six pounds) was more than sufficient to provide a portion for each person (twenty-nine) one a day. . . .

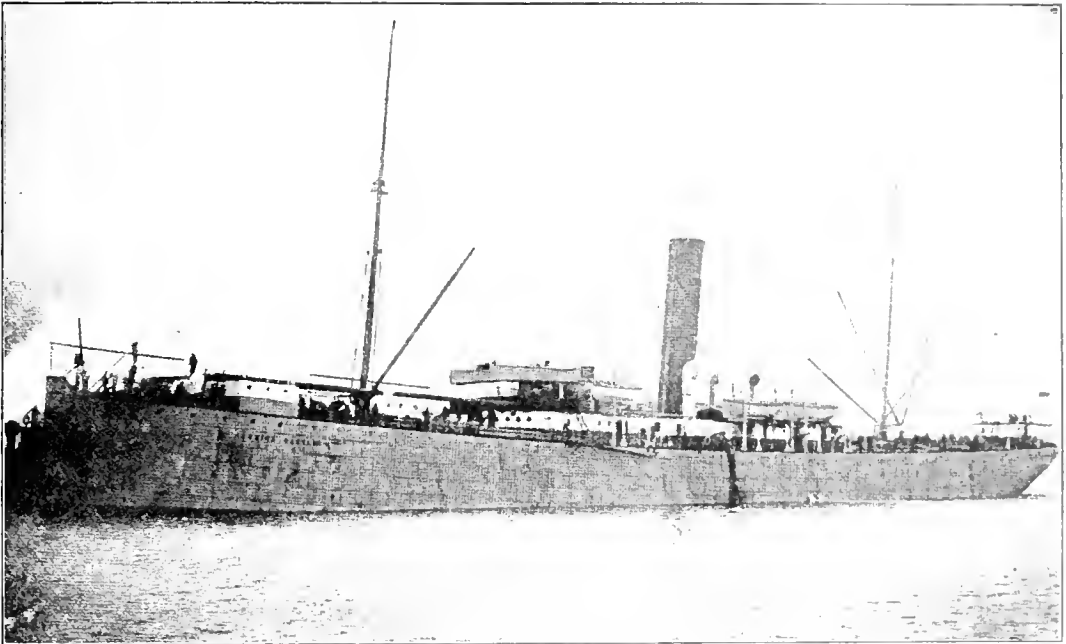
HAILSTONES TO QUENCH THIRST

"We were now feeling the pangs of thirst, as well as the exhaustion of labor and exposure and want of sleep. Some pitiful appeals were made for water. I issued an extra ration to a few of the weaker ones only.

"During the night of Wednesday-Thursday the wind dropped for a couple of hours, and

several showers of hail fell. The hailstones were eagerly scraped from our clothing and swallowed. I ordered the sail to be spread out in the hope of catching water from a rain-shower, but we were disappointed in this, for the rain was too light. Several of the men were getting light-headed, and I found that they had been drinking salt water, in spite of my earnest and vehement order.

"When daylight came, the appeals for water were so angry and insistent that I deemed it best to make an issue at once. After that had gone round, amid much cursing and snatching, we could see that only one more issue remained. One fireman, Thomas, was dead, another was nearly gone. My steward, Buckley, was almost gone. We tried to pour some milk and water down his throat, but he could not swallow.



The Union Castle Liner *Alwick Castle*

She was torpedoed on March 19, 1917, without warning, and six boatloads of passengers were left at sea over 300 miles from land.

"At four o'clock on Thursday afternoon the wind again freshened, and the boat was constantly deluged with spray, and a persistent bailing was necessary to keep her afloat. On this day the log says 'a cattleman, W. Kitcher, died and was buried.'

"We spent a most distressing night. Several of the men collapsed, and others temporarily lost their reason, and one of these became pugnacious and climbed about the boat uttering complaints and threats. The horror of that night, together with the physical suffering, is beyond my power of description.

"Before daylight, however, on March 23rd, the wind permitting, I managed, with the help of the few who remained able, to set sail again, hoping now to be in the Bay of Biscay, and surely to see some vessel to succor us. Never a sail or wisp of smoke had we seen.

"OUR THROATS WERE AFIRE"

"No one could now eat biscuits; it was impossible to swallow anything solid. Our throats were afire, our lips furred over, our limbs numbed, our hands were white and bloodless. During the forenoon of Friday, the 23rd, another fireman, named Tribe, died, and my steward, Buckley, died; also a cattleman, whose only name I could get as Peter, collapsed, and died about noon."

PITIFUL STRAITS OF SURVIVORS

Nor were the occupants of the other boats better off. The chief officer of the ship described in his report the sufferings of his party in a report to the company. Extracts from this report appeared in the London

Times. He speaks of the deaths in his boat, among others of "the storekeeper, who the night before went raving mad and had to be lashed down for the safety of all concerned"; the cattleman, who "jumped overboard after three frustrated attempts, and was drowned, the wind and the sea, and the enfeebled state of us all making it impossible to save him"; and the deck-boy, who "had been quietly dying all day" before he finally



Kladderadatsch, Berlin.

Mars Running Amok

"When once he's loosed, who can hold him?"

(A German cartoonist's apology for the unprecedented ruthlessness of Prussian militarism.)

passed away in the evening. As showing to what straits the survivors were reduced by thirst, Chief Officer Blackman gives this touching account:

"Although we had occasional showers of rain everything was so saturated with salt that the little we did catch was undrinkable. We even tried by licking the woodwork (oars, tillers, seats, etc.) to gather up the rain spots, and so moisten our mouths, but the continual spray coming over rendered this of little use. In fact, we actually broke up the water 'breaker' in order to lick the inside of the staves, which we found quite saturated with moisture, and to us delicious."

According to a cadet on the *Alnwick Castle*, not the least part of the outrage was the attitude of the German sailors. The crew of the U-boat came out on deck and laughed at the plight of their victims.

EVEN HOSPITAL SHIPS NOT SPARED

The next refinement of barbarity perpetrated by the German government was the coolly announced purpose to attack hospital ships, on the preposterous claim that they were being used for transporting ammunition and troops. Accordingly, on the night of March 20th the hospital ship *Asturias* was torpedoed without warning. Fortunately she had discharged her cargo of wounded, but there were many casualties among the crew and the medical staff.

Ten days later, the *Gloucester Castle* also was torpedoed without warning. The wounded were successfully removed—including the German—but fifty-two of the ship's complement were drowned. Other hospital ships followed the same fate, until the British government was compelled to abandon the distinctive lighting and marking of the hospital ships because this only served to make them easier targets for the submarines.

BRITISH SAILORS DELIBERATELY DROWNED

FOR a peculiarly cold-blooded slaughter of helpless seamen it would be hard to find an incident worse than that of the *Belgian Prince*. On July 31, 1917, the British steamship of that name was torpedoed by a German submarine. The chief engineer of the steamer, who survived, gave the following narrative of his experiences:

"About 8 o'clock on Tuesday evening (July 31st), when we were 200 miles off land, I saw the wake of an approaching torpedo. The vessel gave a lurch as she was hit, and I was thrown to the deck among the debris. The vessel listed heavily and all of us took to the boats.

"The submarine approached and shelled the vessel and then ordered the small boats alongside the submarine. The skipper was summoned and taken inside. The others were mustered on the deck of the submarine.

"The Germans removed the lifebelts and the outer clothing of all except eight of us, smashed the lifeboats with axes, and then reentered the submarine and closed the hatches, leaving us on deck. The submarine went about two miles and then submerged.

"I had a lifebelt. Near me was an apprentice boy of 16, shouting for help. I went to him and held him up until midnight, but he became unconscious and died of exposure. At daylight I saw the *Belgian Prince* afloat. I was picked up after 11 hours in the water by a patrol boat."

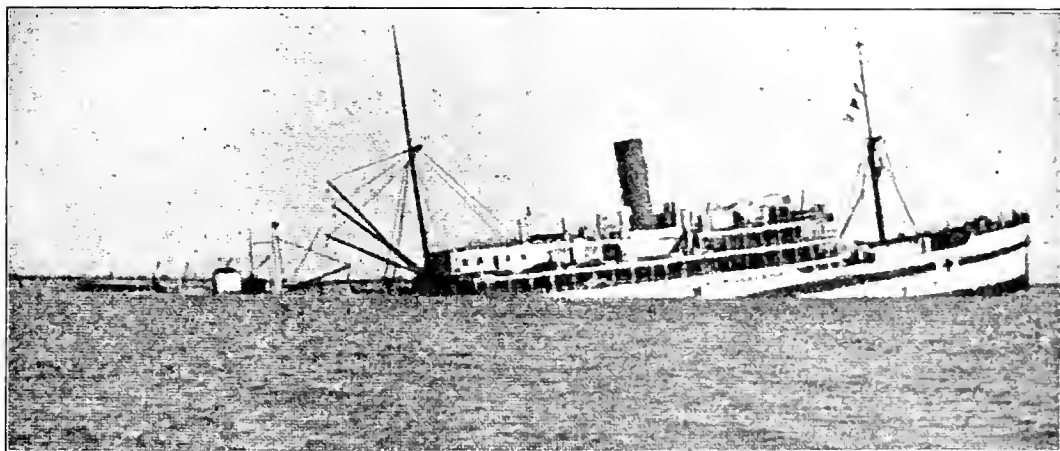
AN AMERICAN NEGRO SAVED

One of the survivors picked up after many hours in the water was a negro, William

submarine, where we were told by the commander to remove our life-belts and to lie on the deck. This we did. Then the commander went into the boats, threw the oars into the sea, and had his men remove the provisions. After that the plugs were taken out of holes in the boats, which were then cast adrift.

"The submarine went to the northeast for twelve miles, the commander taking the lifebelts to the top of the conning tower and throwing them overboard. I hid mine under a raincoat, and as the submarine began to submerge I tied it around my neck and jumped into the sea.

"The rest of the crew stayed on deck until they were swept off by the sea as the boat dived. It was a terrible sight. One by one they threw up their hands and went down, or, fighting



The Sinking of the Hospital Ship *Gloucester Castle*

An official photograph showing the Red Cross plainly marked on the bow.

Snell of Jacksonville, Fla. His testimony corroborated in detail the account given by the chief engineer:

"A torpedo hit the engine room. A submarine then quickly came to the surface about 200 yards to starboard and fired at our wireless apparatus. We left the *Belgian Prince* in three boats and had got fifty yards from the ship when the submarine came alongside and asked for our captain, who was taken aboard and inside the U-boat.

"The members of the crew were ordered to hold up their hands, and the Germans asked if there were any gunners among us. Although there were two, we said 'No.' The Germans then asked if we had any pocket arms.

"We were then ordered to the deck of the

to keep up, they splashed water as they disappeared."

There were forty-three men in the crew of the *Belgian Prince*, and the chief engineer and two others were the only ones who survived. The idea of smashing the boats and taking away the life-belts was obviously directed to the end that there should be none left to tell the story. The details of this story were confirmed by separate affidavits from the three survivors, and they fully justify the language of the British *communiqué* on the incident: "The cold-blooded murder of these men equals, if it does not transcend, the worst crimes which our enemies have committed against humanity."

It is unnecessary to multiply the examples of submarine ruthlessness. Once accepted as a part of German naval policy, it was practiced without scruple and on a grand scale. "Unrestricted submarine warfare" was deliberately adopted because it seemed to promise a quick and easy way of winning the war.

British Isles were cleared of all ships in a few weeks she would be starved into submission. Neutrals, of course, would be offended, but none need be feared. Even if the United States should declare war, which seemed unlikely after the *Lusitania* affair had died away in a tangle of diplomatic correspondence, the



Photograph by Hare.

The *Baltic* Eludes the Submarines

It was generally believed in England that German submarines were watching for a chance to torpedo the *Baltic*, the biggest of the transatlantic liners in the service in 1916. For this reason her sailing orders were withheld until the last moment and she was convoyed by destroyers for a considerable distance. She then took a course far to the north through the ice fields.

The fact that its principles were utterly at variance with the rules of civilized warfare made no difference to a government that repudiated every pledge or treaty that proved inconvenient to its purposes. It was easy to make the excuse that submarines did not exist when international law was written.

This kind of warfare threatened England at her vital spot. She was dependent on the sea for food, and if the seas surrounding the

U-boats could be relied on to make it impossible for American troops to cross the ocean. It was all neatly worked out and reduced to a formula in the approved German method. Thus with a light heart the German government flung its bloody challenge into the faces of the whole world, neutral as well as belligerent, and called into the ranks of its enemies the fresh and limitless resources of the republic of the west.

LIFE ON A SUBMARINE

Little Rest, Constant Risk of Death, Crowded Quarters, Lack of Air and
Light the Common Lot of Undersea Sailors

NO account of underseas exploits would be complete without some description of the conditions under which men in the submarine service, whether friend or enemy, were compelled to live and fight. The following from the *New York Times* pictures the conditions in the Heligoland Bight encountered by the British submarines like the *E-9*, whose story has already been told:

"When a submarine is submerged, her captain alone is able to see what is taking place. The success of the enterprise and the safety of the vessel depend on his skill and nerve and the prompt, precise execution of his orders by the officers and men under his command.

"Our submarines have been pioneers in waters which have been mined. They have been subjected to skilful and well-thought out anti-submarine tactics by a highly trained and determined enemy, attacked by gun-fire and torpedo, driven to lie at a great depth to preserve battery power, hunted for hours at a time by the hostile torpedo-craft, and at times forced to dive under our own war-ships to avoid interfering with their movements.

"Sudden alterations of course and depth, the swish of propellers overhead, and the concussion of bursting shells give an indication to the crew of the risks to which they are being exposed, and it speaks well for the morale of these young officers and men, and their gallant faith in their captains, that they have invariably carried out their duties quietly, keenly, and confidently under conditions that might well have tried the most hardened veteran.

TERRIBLE HARDSHIPS IN STORMY WEATHER

"The hardships undergone during stormy weather are terrible. During the winter months westerly gales were frequently experienced in the Bight, and these gales were invariably accompanied by high, steep seas, which made it impossible to open the conning-tower hatch. Vision was limited to that through the periscope,

and was only a cable or two between the seas, which continually broke over them.

"There was no rest at the bottom, even at twenty-two fathoms, as the vessels rolled and bumped dangerously. They were consequently compelled to keep under way at a depth clear of the keels of possible ships. When battery power became low the submarine had perforce to come to the surface to recharge. While on the surface it was essential to run the engines in order to keep head to sea, and through the ventilator, which, with the engines running, must necessarily be kept open, much water was shipped.

"The weather had not been good, and throughout the six days the cold had been intense—arctic, in fact. At times ice formed on the periscope very quickly and obscured vision so that it had to be dipped every five minutes. On the surface the thermometer gave no reading, though it had a minimum of 18 degrees of frost. To receive messages by wireless was impossible, for the spray froze on the aerial, forming a coating of ice two inches thick.

"From time to time it was necessary to dive to remove the icicles, which, over a foot long, depended from portions of the superstructure. The bridge screen froze like a board, and only with difficulty could it be folded, and the ice on the coats of the officers and crew did not thaw until some hours after the garments had been hung up below."

"SUPERMEN" ON GERMAN SUBMARINES

CAPTAIN PERSIUS, the German naval critic, published in the *Berliner Tageblatt* an article entitled "The Hardships of the U-Boat Service," which pictures conditions from the German point of view. The following extract is taken from a translation that appeared in the *New York Herald*:

"A seaman's lot is never easy. Night and day he is separated from a watery grave only by a

thin plank. And yet his existence seems like paradise compared with that of the U-boat man. This man dispenses with what every child of man regards as indispensable for life—light and air. When the road to Hades gapes for the U-boat man it leads through darkness and torment. He knows that he is threatened most by a slow death through suffocation. Everybody else—with exceptions like stokers, men in the



Looking for the Enemy

A British submarine officer examining the periscope, in the hope of finding a German target.

magazines, and some others—enjoys the fresh air and looks up and sees above him the broad canopy of heaven when in the roar of the battle he must enter the gates of the Great Beyond. Indeed, in every case, *'Dulce et decorum est pro patria mori.'* But our sympathies will be more deeply moved when we think of the death of the U-boat man.

"Of course the U-boat man also sees some of the bright side of life, and it would be wrong to pass by without noting this. On board a big battleship the individual is more or less

lost in the crowd. He is only one among the more than 1100 men composing the crew of a modern ship of the line. On board the U-boat every one is an important personality. There are rarely more than 30 men in a high seas U-boat. So every one, be he sailor or oiler, has several duties to perform; so every one is fully acquainted with all the numerous and complicated mechanisms and expert in their use.

"The commander, watch officer, and chief engineer know every one of their men thoroughly. They stand in a comradely relationship to them, they share their sufferings and joys in every way. Their food is all cooked in the same kettle and gift cigarettes of the same brand are found between their lips when the boat bobs up for a brief rest and the weather permits. Below decks smoking is not allowed. To be sure, the commander has a tiny little room of his own—in which to write his official reports, etc.

MENACED BY DANGER EVERY MINUTE

"But the lack of light and air, the absence of every comfort, the dangers that constantly menace them every hour, yes, every minute, are the common lot of all U-boat men. There is, however, greater responsibility upon the officers and the chief engineers, although every single U-boat man, sailor and oiler alike, knows that oftentimes a slight oversight or a false move will seal the fate of himself and his comrades.

"The most careful selection among the volunteers, who are always offering themselves in great numbers for the U-boat service, is just as important as the long period of training during which the U-boat aspirants are schooled in every branch of their difficult service. They must all be in superior health and be what they call *'fixe Kerle'*, i.e., quick in perception of decision, never timid or hesitating, skilled, and also infinitely serious in their conception of duty, dependable and steadfast. The sailor must be a 'thoroughbred seaman'; the oiler a perfect mechanic.

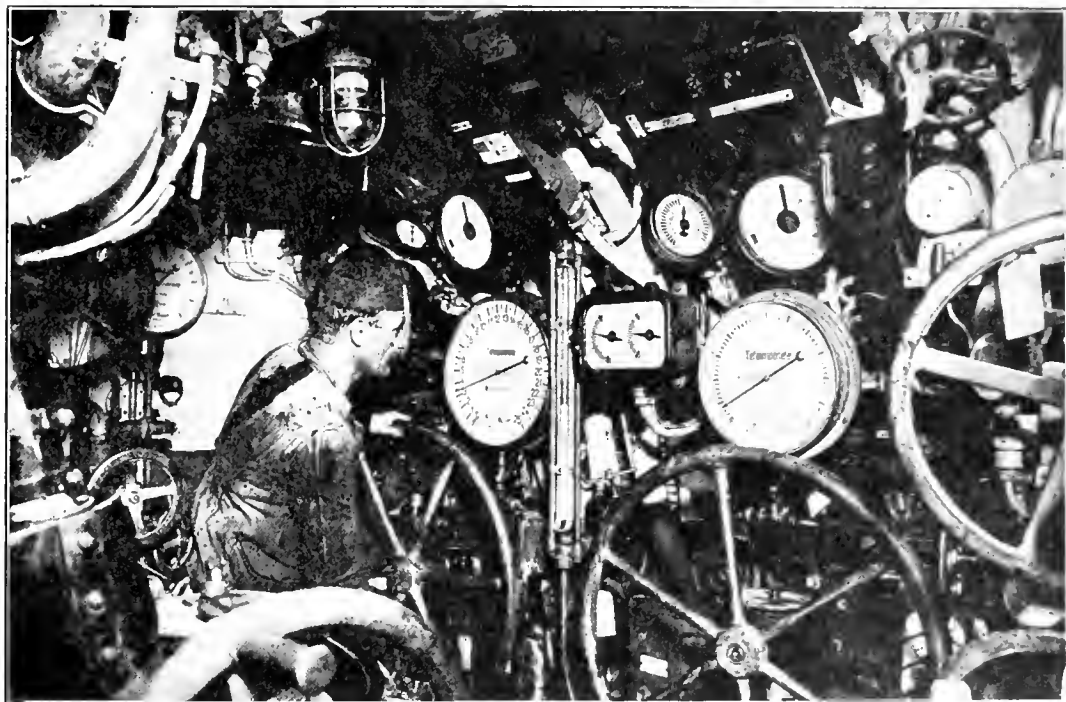
"The members of the crews are trained at the U-boat school. There they become acquainted with all the many complicated apparatus, the expert use of which forms the basis for every success. The pupils are made familiar with the instruments that show the condition of the atmosphere, the trim of the boat and the height and depth, with the functions of the numerous valves, slides and levers, etc., and with the safety and life-saving apparatus, a thorough

knowledge of which is indispensable for every U-boat man. In addition to these general points, the U-boat sailor must, besides his ordinary qualities of seamanship, have skill in navigation, in signaling, in serving and launching torpedoes, and in handling the deck guns and their ammunition, while the oiler must understand the care of the engines that drive the U-boat above and below the water well enough to enable him, in case of necessity, to take the place of the engineers and, if possible, that of the chief engineer.

FEARFULLY TRYING ON THE NERVES

ANOTHER picture is supplied by Commander Hansen, captain of a U-boat, who gave the following interview on the conditions inside a submarine:

"It is fearfully trying on the nerves. Every man does not stand it. . . . When running under sea there is a death-like silence in the



Underwood and Underwood

Interior of a German Submarine

The central post of the *U-105* surrounded by an endless chain of wheels and meters. This was one of the German submarines turned over to the Allies by Germany.

"Correspondingly greater demands are made upon the officers and the engineers. Every U-boat commander is almost a 'superman.' He must possess extraordinary gifts of both an intellectual and physical kind if he wants to fill his post with success. To him belongs a quite special talent. The officers' corps of the German Navy includes a number of such 'supermen.' These U-boat commanders are reinforced by an excellent body of engineers, whose loyalty and knowledge already in times of peace had more than once demanded unlimited recognition."

boats as the electric machinery is noiseless. It is not unusual to hear the propeller of a ship passing over or near us. We steer entirely by chart and compass. As the air heats it gets poor, and mixed with the odor of oil from the machinery. The atmosphere becomes fearful. An overpowering sleepiness often attacks new men, and one requires the utmost will power to remain awake. I have had men who did not eat during the first three days out because they did not want to lose that amount of time from sleep. Day after day spent in such cramped quarters, where there is hardly any room to

stretch your legs, and constantly on the alert, is a tremendous strain on the nerves.

"I have sat or stood eight hours with my eyes glued on the periscope, and peered into the brilliant glass until my eyes and head ached. When the crew is worn out we have a good sleep and rest under the water. The boat often is rocking gently with a movement something like a cradle. Before ascending, I always order

German government found it necessary to offer special inducements for the U-boat service. A submarine crew received ten per cent. higher pay than the men in any other branch of the national service, and in addition were awarded special bonuses. According to one authority fifty per cent. of the value of a captured ship was distributed among her captors, five per



© Western Newspaper Union.

Captured With Their Submarine

Officers and men of a German undersea boat that fell into American hands.

silence for several minutes in order to determine by hearing, through the shell-like sides of the submarine, whether there are any propellers in the vicinity."

PREMIUMS PAID FOR U-BOAT SERVICE

Under the perils and discomforts sketched in the foregoing it is not surprising that the

cent. to the commander of the submarine, five per cent. to the chief engineer, fifteen per cent. to the remaining officers, and twenty-five per cent. to the crew. Percentages for torpedoed ships were based on the insurance value of the vessel. In these cases, the submarine commander got one per cent., the chief engineer one per cent., the remaining officers four per cent.

and the crew ten per cent. There were also extra rewards for special exploits.

WEAKNESS AND STRENGTH OF THE SUBMARINE

IT is true that the achievements of the submarine in the war, brilliant as they were, did not measure up to the startling prediction of Admiral Scott. Surface navies were threatened but not driven off the seas. Blockades were seriously weakened but not made ineffective. The submarine developed serious weaknesses that interfered with its complete success. It was blind under water, it had no armor, its range of attack was short, and above all, it was slow, too slow to be of any tactical value in battle and too slow to be able to combat the destroyer. The latter, in fact, with its speed, its shell guns, and above all its depth charges, came the nearest to being the Navy's answer to the submarine.

At the same time it must be remembered that the submarine proved to be a terrible weapon, the most effective weapon ever devised for a naval power on the defensive. In the phrase of Admiral Mahan, it was an ideal "offensive-defensive" instrument. On the defensive side, aided by mine fields, it kept the blockading fleet many miles off the German coast. On the offensive side it penetrated enemy waters at will. We have already seen what British submarines did in the Dardanelles. It is hardly necessary to add that British waters were infested by German submarines. On more than one occasion early in the war before the anti-submarine defenses had been prepared, a German sub-

marine entered the British naval base at Scapa Flow and sent the Grand Fleet hurrying to sea in a panic. The Germans added to the menace of the undersea boat by devising the mine-layer type. Thus British waters were sown with mines that cost heavily in ships and lives. The cruiser *Hampshire*, for example, with Lord Kitchener on board, went down on one of these (June 5, 1916), and the super-dreadnought *Audacious* was another victim.

Moreover, as the war progressed both the Germans and the British made great strides in the development of the submarine. Shell guns soon supplemented the torpedo, greater size and speed were attained, and minor devices were invented for detecting the presence of an enemy. By the end of the war the British, who at first had had difficulty in keeping up with the advances of the German submarine, succeeded in gaining the lead. Two new types appeared under the white ensign—a submersible monitor, with a protected deck and a turret mounting a 12-inch gun, and a submarine driven by steam on the surface, attaining thereby a speed of twenty-two knots. Apparently these appeared too late to see service, but they demonstrate the fact that the possibilities of the submarine were by no means exhausted by the experiences of the war. They overcome some of the greatest defects of the submarine—the lack of armor, heavy ordnance, and speed. The story of undersea navigation and warfare may be considered, therefore, as only begun. The effect of the submarine on the navies of the future may yet be as revolutionary as that of the little *Monitor* on the wooden fleets of the 'sixties.

BRITISH OVERSEAS TRANSPORT STATISTICS

Brassey's Naval Annual for 1919 published statistics covering the transport of British troops and of all that the troops have required for their service in many theatres of hostilities. They cover not only the work of the Navy but of the mercantile marine. It was the command of the sea and the protection of naval forces in patrol, escort, and convoy which made possible this extraordinary volume of transport without which the war could not have been won. A summary of total *personnel* carried follows:

	End of August, 1915	End of August, 1916	End of August, 1917	End of August, 1918
United Kingdom to France	1,224,257	3,154,743	5,705,190	9,337,395
France to United Kingdom	335,696	1,311,583	2,896,032	5,499,809
United Kingdom to Overseas	273,743	601,880	785,066	968,228
Overseas to United Kingdom	180,533	499,532	842,121	1,766,974
Overseas to ports other than France	354,745	1,459,281	2,414,813	3,682,172
Coastwise moves	158,414	182,485	217,471	235,471
Total	2,517,388	7,209,224	12,860,693	21,490,049

SECTION III—MINOR ENGAGEMENTS

BATTLE OF HELIGOLAND BIGHT

By Sending Forward Submarines as Decoys, Beatty Trapped the Enemy
and Sunk Three of His Cruisers

THE "Bight" of Heligoland is a channel 18 miles wide, east of the island and leading to the mouth of the Elbe. This was the scene of a spirited attack by Admiral Beatty on the 28th of August, 1914. It was the first and last time that any British squadron operated at close quarters with the German naval bases. The actual fighting took place about seven miles north of Heligoland.

Reconnoitering British submarines had reported German light cruisers and smaller craft in the vicinity of Heligoland. The British plan was to draw these enemy ships away from the protecting guns of the fortress island and then to destroy them. Detailed official reports have not been published, but various versions appearing in the press indicate a British scheme carried out in some such way as is described in the following paragraphs:

Three submarines were to steam ahead on the surface of the water to act as decoys, and to retreat before the German ships which were expected to give chase. The light cruisers *Arethusa* and *Fearless* were assigned the mission to cut the enemy off from their home bases. A squadron of light cruisers was detailed to support these two ships, while other light cruisers and battle cruisers were held in reserve farther away in the northwest. British destroyers accompanied each of these three cruiser detachments. Vice Admiral Beatty was in chief command of the British forces.

All ships being in their allotted positions at daybreak of the 28th, the three decoy submarines showing their hulls advanced at half speed toward Heligoland. They were accompanied by five sister ships steaming submerged and followed by two destroyers. This detach-

ment was soon sighted, and German destroyers gave chase, followed by the light cruisers *Ariadne* and *Strassburg*.

At about 7 a. m. this chase was being conducted toward the British reserve force in the northwest, while the supporting detachment, consisting of the *Arethusa* and the *Fearless* with accompanying destroyers, was steaming toward the eastward to cut off the German retreat. At 8.10 a. m. these two cruisers were engaged by enemy cruisers, and a stubborn action ensued in which the *Arethusa* was damaged. At 8.25 a six-inch projectile from the *Fearless* wrecked the forward bridge of the *Ariadne*, killing her captain, and the German ships then withdrew. At about 9 o'clock the *Fearless* towed the *Arethusa* to the westward, where she was able to make temporary repairs which permitted her to return to the engagement about an hour later.

LIVELY WORK BY DESTROYERS

Meanwhile lively destroyer actions were in progress. The German *V-187* boldly attacked a superior number of enemy destroyers, but was overpowered by gun fire and sank with her crew cheering and firing their guns as long as the muzzles were above water.

During a lull in the fighting the British destroyers *Goshawk* and *Defender* lowered boats to rescue survivors of the *V-187*, but the German light cruiser *Mainz* interrupted this operation and forced the destroyers to abandon two of their small boats. The commander of the submerged British submarine *E-4* happened to be nearby watching this episode through his periscope. Taking in the situation, he maneuvered his submarine for a rescue, and surprised the two small

boats by suddenly coming to the surface midway between them. The Britishers and their rescued prisoners were quickly taken aboard, and the *E-4* again submerged.

At about 10 o'clock the British destroyers *Lurcher* and *Firedrake*, which were in company with the decoy submarines, reported that they were being chased by two fast enemy cruisers. The *Arethusa*, *Fearless*, and two more light cruisers armed with 4-inch guns went to the rescue and engaged the *Strassburg*, which vessel was soon supported by the *Köln* and *Mainz*. The larger guns carried by the German cruisers proved too strong for the lighter armed British cruisers, and calls for assistance were sent to the reserve force of battle cruisers and light cruisers previously stationed in the northwest.

THE KÖLN, MAINZ AND ARIADNE SUNK

In the meantime (at 11 a. m.) this reserve force had been attacked by three German submarines. This attack was frustrated by rapid maneuvering, and four British destroyers made a counter-attack. Shortly after eleven Vice-Admiral Beatty, flying his flag in the battle cruiser *Lion*, received word that the British light cruisers were being hard pressed, and he ordered the *Falmouth*, carrying eight 8-inch guns, and the *Nottingham*, carrying nine 6-inch guns, to go to their support. A little later further calls for assistance were received, and the battle cruisers, having worked up to full speed, proceeded to the scene of the action. When the *Lion* and *Queen Mary* appeared out of the mist their heavy guns quickly decided the battle.

The noonday sun cleared away the mist which had masked the large guns of Heligoland during the engagement, and by evening both British and German forces had retired to their respective home ports. The Germans lost three light cruisers, *Köln*, *Mainz* and *Ariadne*, and one destroyer, *V-187*, sunk. The light cruiser *Strassburg* suffered severe damage as did also other of the German destroyers and small craft. The British lost no ships sunk, but the light cruiser *Arethusa* and some of the destroyers were hard hit and compelled to limp back to home navy yards for extensive repairs before returning again to active service.

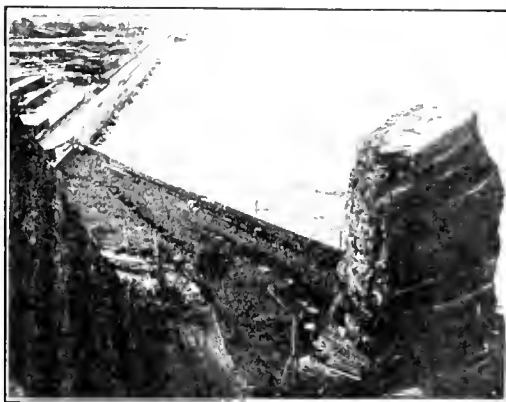
BEATTY'S OFFICIAL REPORT

The following is Admiral Beatty's report of the engagement:

H. M. S. *Lion*, September 1, 1914.

SIR—I have the honor to report that on Thursday, August 27, at 5 a. m., I proceeded with the First Battle Cruiser Squadron and First Light Cruiser Squadron in company, to rendezvous with the Rear Admiral, *Invincible*.

At 4 a. m., August 28, the movements of the flotillas commenced, as previously arranged, the Battle Cruiser Squadron and Light Cruiser Squadron supporting. The Rear Admiral, *Invincible*, with *New Zealand* and four destroy-



© Underwood and Underwood.

The Mole and the Harbor of Heligoland

ers, having joined my flag, the squadron passed through the prearranged rendezvous.

At 8.10 a. m. I received a signal from the Commodore (T), informing me that the flotilla was in action with the enemy. This was presumably in the vicinity of their prearranged rendezvous. From this time until 11 a. m. I remained about the vicinity ready to support as necessary, intercepting various signals, which contained no information on which I could act.

At 11 a. m. the squadron was attacked by three submarines. The attack was frustrated by rapid maneuvering, and the four destroyers were ordered to attack them. Shortly after 11 a. m. various signals having been received indicating that the Commodore (T) and Commodore (S) were both in need of assistance, I ordered the Light Cruiser Squadron to support the torpedo flotillas.

Later I received a signal from the Commodore (T), stating that he was being attacked by a

large cruiser, and a further signal informing me that he was being hard pressed, and asking for assistance. The Captain (D), First Flotilla, also signaled that he was in need of help.

From the foregoing the situation appeared to me critical. The flotillas had advanced only two miles since 8 a. m., and were only about 25 miles from two enemy bases on their flank and rear respectively. Commodore Goodenough had detached two of his light cruisers to assist some destroyers earlier in the day, and these



© Underwood and Underwood.

A Street Scene in Heligoland

had not yet rejoined. (They rejoined at 2.30 p. m.) As the reports indicated the presence of many enemy ships—one large cruiser—I considered that his force might not be strong enough to deal with the situation sufficiently rapidly, so at 11.30 a. m. the battle cruisers turned to east-southeast and worked up to full speed. It was evident that to be of any value the support must be overwhelming, and carried out at the highest speed possible.

I had not lost sight of the risk of submarines, and possible sortie in force from the enemy's base, especially in view of the mist to the south-east.

Our high speed, however, made submarine attack difficult, and the smoothness of the sea made their detection comparatively easy. I considered that we were powerful enough to deal with any sorties except by a battle squadron, which was unlikely to come out in time, provided our stroke was sufficiently rapid.

At 12.15 p. m. *Fearless* and First Flotilla were sighted retiring west. At the same time the Light Cruiser Squadron was observed to be engaging an enemy ship ahead. They appeared to have her beat.

I then steered northeast to sounds of firing ahead, and at 12.30 p. m. sighted *Arethusa* and Third Flotilla retiring to the westward engaging a cruiser of the *Kolberg* class on our port bow. I steered to cut her off from Heligoland, and at 12.37 p. m. opened fire. At 12.42 the enemy turned to northeast, and we chased at 27 knots.

At 12.56 p. m. sighted and engaged a two-funneled cruiser ahead. *Lion* fired two salvos at her, which took effect, and she disappeared into the mist, burning furiously and in a sinking condition. In view of the mist and that she was steering at high speed at right angles to *Lion*, who was herself steaming at 28 knots, the *Lion's* firing was very creditable.

Our destroyers had reported the presence of floating mines to the eastward, and I considered it inadvisable to pursue her. It was also essential that the squadrons should remain concentrated, and I accordingly ordered a withdrawal. The battle cruisers turned north and circled to port to complete the destruction of the vessel first engaged. She was sighted again at 1.25 p. m. steaming southeast, with colors still flying. *Lion* opened fire with two turrets, and at 1.35 p. m., after receiving two salvos, she sank.

The four attacked destroyers were sent to pick up survivors, but I deeply regret that they subsequently reported that they searched the area but found none.

At 1.40 p. m. the battle cruisers turned to the northward, and *Queen Mary* was again attacked by a submarine. The attack was avoided by the use of the helm. *Lowestoft* was also unsuccessfully attacked. The battle cruisers covered the retirement until nightfall. By 6 p. m., the retirement having been well executed and all destroyers accounted for, I altered course, spread the light cruisers, and swept northwards in accordance with the Commander-in-Chief's orders. At 7.45 p. m. I detached *Liverpool* to Rosyth with German prisoners, seven officers and 79 men, survivors from *Mainz*.

No further incident occurred. I have the honor to be, sir, your obedient servant,

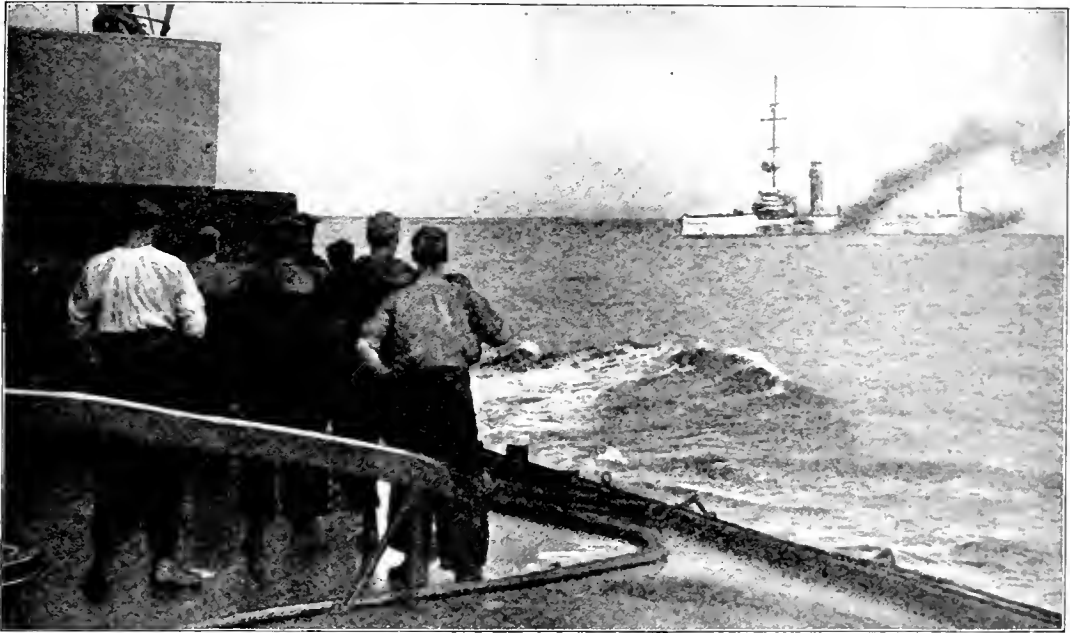
(Signed) DAVID BEATTY, *Vice Admiral*.

The Secretary of the Admiralty.

The heroine of this engagement, at least from the point of view of the attacking fleet,

very tube they had just left. Had it come 30 seconds earlier it would have blown up both torpedoes and sent the cruiser to the bottom.

When the battle took place the *Arctura* had been commissioned only a day or two, and was put into service merely as an emer-



Watching a German Cruiser Go Down

Official photograph of the sinking of the *Mainz*, during the action off Heligoland, August 28, 1914.

was the light cruiser *Arctura*, Commodore R. W. Tyrwhitt, R. N. She had a narrow escape from destruction. When all her guns had been put out of action she discharged two torpedoes at the *Mainz*, and immediately afterward a shell from the *Mainz* struck the

agency ship. She took part later in an air raid by seaplanes on Cuxhaven on Christmas day of the same year, and she distinguished herself again in the action of the Dogger Bank, in January. Unluckily she was destroyed by a mine on February 11, 1916.

THE KIEL CANAL

Before the Kiel Canal was built Germany had to maintain two fleets in two seas. Her position in this respect resembled that of the United States and Russia, and she found it not at all easy to join these two fleets, especially if a strong opponent dominated the waters from the North Sea to the Baltic via the Kattegat and the Skager Rack.

Bismarck was the one who urged the building of the Kiel Canal, for he saw that a canal cutting through Schleswig-Holstein, making a short connection under German control between the Baltic and the North Sea, would virtually double the striking power of the German Navy.

The Canal was built (1887-95) at a cost of \$39,000,000 and was reconstructed in 1907. It connects the interior of the spacious Kiel Bay with the mouth of the Elbe, which is protected by the strongly fortified island of Heligoland, lying in front of it.

RAIDS ON THE ENGLISH COAST

The German Policy of "Frightfulness" Included the Bombarding of Unfortified Towns from the Sea

AS noted earlier in this chapter the British coast defenses amounted to little or nothing. The policy was to rely on the fleet for protection and, it might be added, on the Hague Convention also, which forbade attacks on unfortified towns. What fortifications existed were wholly unfit to cope with



© Underwood and Underwood.

In Peaceful Scarborough

A house in Wykeham Street, where a woman and her two children were killed by a shell during the German raid by sea.

modern naval artillery, and the great majority of coast towns had no defenses whatever. Under these conditions, while the Germans could not attempt an invasion till they controlled the crossing by sea, they could send their swift cruisers under cover of darkness and fog and attack the coast by gunfire at any point they chose. Then, after a brief

bombardment and before any division of the fleet could come up with them, they could dash back again to their home ports. Of course these raiding cruisers would have to take the chances of running on English mines or of coming upon an overwhelming force of the Grand Fleet, but these were just the sporting chances that the German officers welcomed. Moreover, they cared no more for Hague conventions than did the Zulu.

It is not surprising then that raids of this sort were twice attempted on a large scale in the latter part of 1914. On November 3rd eight cruisers made an attack on Yarmouth. There were three battle cruisers, two armored cruisers, and three protected cruisers. These arrived off Yarmouth shortly after dawn and opened fire. For twenty minutes the bombardment continued, but to no purpose, for most of the shells fell into the sea. The German commander feared the presence of mine fields and kept a safe distance off shore. As the squadron retired it dropped floating mines. Two destroyers and two submarines started out in pursuit and one of the submarines, the *D-5*, was lost on one of these mines. At the same time the German armored cruiser *Yorck* was blown up by a mine encountered on the return trip.

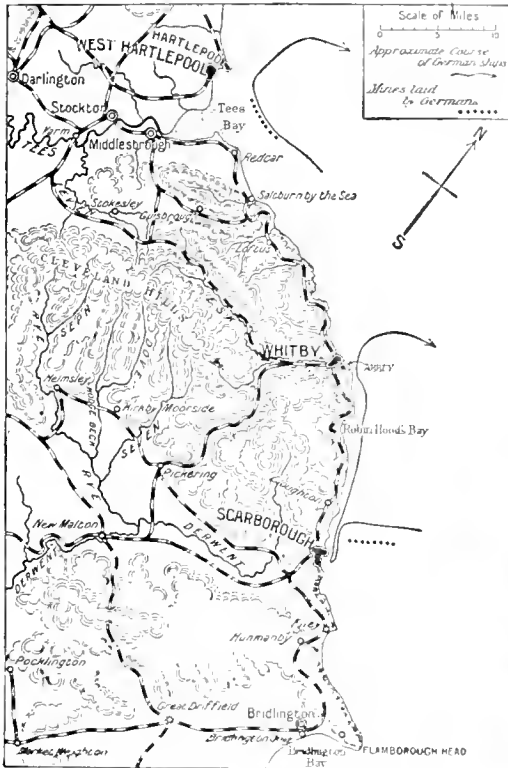
THE "MORAL EFFECT WORTH MUCH"

Worthless as the expedition was from any point of military advantage gained, it seems to have been the cause of great exultation in Teuton breasts. The following letter written by a German sailor to his brother, subsequently published in *Die Zeit* of Vienna, and translated for the London *Times*, reflects this sentiment:

"At dawn we were still about 30 nautical miles from the English coast. We saw only a crowd of Dutch and English fishing boats. They

were fishing, and we tore through their nets. They must have been not a little surprised to see us steam by. At 8 a. m. on November 3rd we came in sight of the lighthouse on the English coast, and soon the command rang out, 'Clear for action! Load! Distance 10 kilometers.' An English coast cruiser and some

great for us to do considerable damage. Some shells fell on the shore, window panes were broken, and so on. If only we had been five kilometers nearer to the coast Yarmouth would have been in flames. The main object of our enterprise had, however, been gained. In the first place our small cruisers, which were packed full with mines, had strewn the local waters with German mines. When the English submarine *D-5* tried to attack us it struck a mine and blew up. In the second place we had shown the Englishman, who is always boasting of his command of the sea, that he cannot even protect his own coast, and that the German Navy is not, like him, afraid to attack. In the third place we have given the inhabitants of England, and especially the people of Yarmouth, a thorough fright. How elegantly (for the English are sportsmen) must they have sprung out of their warm beds when the German guns thundered in front of their town! The moral effect is also worth much. The noise which the heavy guns make can hardly be described. It is simply gigantic."



The Scene of the Second Raid

enemy destroyers came in sight. 'Port side fire! Ten kilometers! Fire!' Our heavy and middle artillery thundered at the enemy. Soon came the command, 'Starboard fire! Distance 104 hectometers! At the enemy cruiser! Fire!' Once more indescribable noise. The Englishman ran fast. Unfortunately we could not pursue him because of the danger of mines. Nor could we, on account of the enemy's mines, go closer to land. Soon there was no English ship still in sight.

"Simultaneously with the bombardment of the English cruiser, which was injured and had some dead and wounded, our heavy artillery (11 in. shells weighing 640 lbs.) bombarded the English coast—to be precise the town of Lowestone (sic), near Yarmouth. Unfortunately the distance (15 kilometers) was too



© Underwood and Underwood.

Another Example of "Frightfulness"

The second raid took place on December 16th, and was directed against three coast towns, Hartlepool, Scarborough, and Whitby. Von Spee's squadron had been annihilated in the Pacific only about a week before, and there was a great outcry in the German papers for vengeance. It is quite possible

that this raid was intended as an answer. It is not clear, however, why these three places were selected for punishment. Hartlepool is a small industrial center, Scarborough a summer resort, and Whitby a little fishing village noted for its ancient ruin, Whitby Abbey. None of them was fortified.

About eight o'clock in the morning German ships, two battle cruisers and one armored cruiser, appeared off Hartlepool and opened fire. About the same time another squadron arrived off Scarborough. This consisted of one battle cruiser, one armored cruiser and two smaller vessels. These ships bombarded Scarborough, laid mines, and then proceeded to Whitby, where they arrived shortly after nine and began a bombardment which lasted only about ten minutes. The Whitby attack

did little damage, but in the other two towns the loss of property was very great and the number of killed and wounded were numbered by the hundreds. Serious losses also were occasioned by the mines left on the coast.

The result of this expedition was to delight the hearts of the Germans, who described it to themselves in the most fantastic colors, and to create intense mortification among the English who did not minimize the facts. It seemed incredible that raids of this character were possible while the British fleet controlled the sea. But the chief military consequence, as in the case of the first Zeppelin attacks, was to awaken the English to a realization that they were involved in a real war and to increase the recruiting.

THE BATTLE OF DOGGER BANK

German Cruisers Trying to Raid the English Coast Headed off by Beatty and Forced to Fight—The *Blücher* Sunk

BATTLE CRUISERS IN ACTION

ONCE more the German cruisers started for the English coast to repeat their exploit of shelling defenseless towns. It was on January 24, 1915, but on this day they were sighted by Vice-Admiral Beatty's patrol squadron at seven in the morning when they were thirty miles off the coast. This squadron consisted of the battle cruisers *Lion*, *Tiger*, *Princess Royal*, *New Zealand*, and *Indomitable*, in company with four light cruisers, one of which was the *Arethusa*, which had made herself famous in the Heligoland Bight action. There were also three light cruiser flotilla leaders with their destroyers. The German squadron under Rear-Admiral von Hipper consisted of the three battle cruisers *Derfflinger*, *Seydlitz*, *Moltke*, and the protected cruiser *Blücher*, together with light cruisers and destroyers. On sighting the British the Germans had no other alternative than to turn and run for safety.

A stern chase engagement followed at full

speed. The hitting began at a range of about 18,000 yards and the shooting held at long range throughout the entire action. The *Blücher* being slower than the battle cruisers and having trouble with her engines shortly after the fighting began, dropped astern, and about quarter to eleven drew out of line severely damaged. At 12.37 she received her death wound and, turning turtle, she went to the bottom.

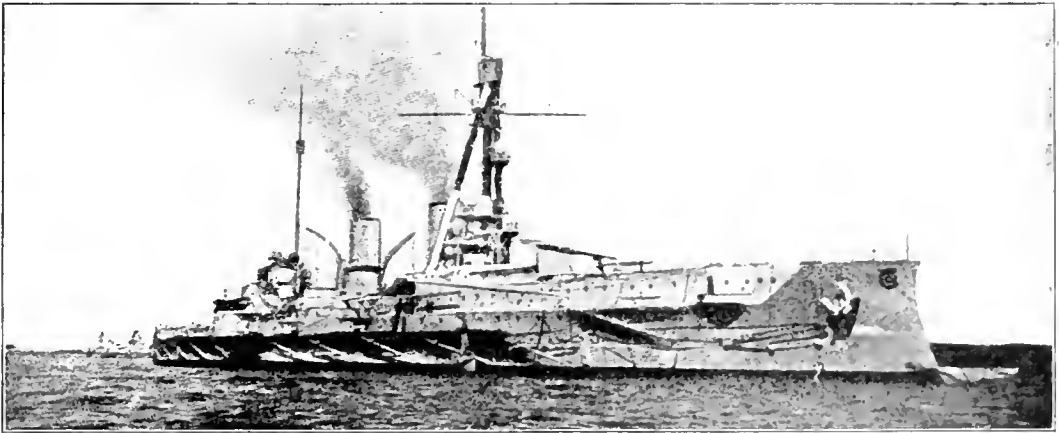
Shortly after eleven the leading British cruiser, Admiral Beatty's flagship *Lion*, was disabled and compelled to drop out of action. The command then devolved upon Rear Admiral Sir Archibald Moore. Beatty summoned a destroyer alongside and followed the line of battle, which by this time had raced out of sight down the horizon. When he came up with his ships shortly after noon he found them returning. Just why Moore called off the pursuit has never been satisfactorily explained. The Admiralty issued three accounts of the action and no two of them agreed as to the reason for breaking off the pursuit. Finally it was laid to "mines

and submarines." As a submarine attack had been made earlier in the day, without affecting the pursuit, and as the Heligoland Bight action had been fought in waters alive with submarines, the danger from this source seems fanciful. At the speed and the ranges of such a battle as this a submarine would be harmless except possibly to finish off a disabled ship. And as the pursuit ended seventy miles from Heligoland, it would be interesting to know what were the evidences of mines.

Nevertheless the sinking of the *Blücher* and the hounding back home of the other cruisers came as a pronounced victory to the British public and greatly heightened the

totally unarmored was indeed a front line exposure, but luckily the stern guns of the fleeing Germans were directed toward the big ships. The gunner said:

"I might mention that we were well within range of the Germans during this time, who apparently could not spare one of their 11-inch guns for us, which was a good thing, as one from them would not leave much of the *Arctusa*, I think. Their shells were beginning to fall a little too near us for safety, and we really thought we were in for it as first one big one fell just short—this was my side (port). The next came with a horrible, shrieking noise and passed over the ship just abaft the mast and damaged our port aerial. I then began to think that the next would find the range,



The German Cruiser *Blücher* Sunk in the Dogger Bank Battle

popularity of the battle cruiser type. It was studied with interest by naval men the world over because it was the first action of the war between big ships. It served also to discourage the Germans from attempting any further repetitions of the Scarborough raid.

THE *BLÜCHER* TORPEDOED

A GOOD picture of the battle scene was given by a gunner on the *Arctusa*, which, while too small apparently to figure in the official dispatches, played her part gallantly and at the end gave the *Blücher* her finishing blow. The *Arctusa* had been ordered by signal to take the head of the line, there apparently to use her torpedoes if opportunity offered. This for a light cruiser

but fortunately it passed just astern. We had a very warm time for a while, as you must understand that the ship is quite unprotected, and we have no protection but only light shields at our guns—in fact, the shield of my gun has twice been burst in by the seas.

"The German ships appeared to be on fire more than once, and at last there was no doubt about one of them—the *Blücher*. It was then that our turn came, and as her fire slackened we quickly came up with her and started with our bow six-inch with Lyddite. This is a terribly destructive shell, and when our big ships were firing, their shells on exploding caused clouds of yellow smoke. Our starboard battery of four-inch also came into play, but unfortunately all this time I had to stand idly by with a shell in my arms, as none of the guns on our side got a chance; this was rather trying.

"The *Blücher* was now out of action, and the *Arctusa* gave the *coup de grâce* by slipping in two torpedoes at her just as we slewed around. These caused frightful havoc, one bursting in the engine-room and the other just below the fore turret, and rapidly caused her to capsize. She was before this a battered wreck on deck, practically all her gun crews were killed, and her officers drove the men from the stoke-hole at their sword-points to reman the guns. This was told us by the German prisoners aboard, and one or two of them have wounds which they said had been caused by their own officers' swords. . . .

SCENES AFTER THE BATTLE

"The *Blücher*, which had capsized, was lying awash, with her side just out of the water and men standing on it, while all around there seemed hundreds swimming and drifting in cork jackets toward us. We were very close; in fact, it seemed dangerously so. I shall never forget the sight nor what followed later. I think it was more affecting than anything. Anyway, we started to drag them in up the ship's side, and in this way and by the boats we got 123 on board, while the destroyers also saved a lot. Some were badly burned. We got six officers in the above.

"Shortly after we got our boats a terrible sight came along, which was a lot of Germans being swept along in the water and who had evidently drifted off in another direction when we picked the others up. In this case they were sweeping by the ship, and we could only save one or two—several drowned before our eyes, although having life-belts on. Then the destroyers came up and picked up a lot. By this time our battle cruisers had disappeared after the Germans, and we turned about and started to go for all we were worth back to the *Lion*, the *Indomitable* having already gone back. There was, of course, great danger to her from submarines, and it was a very anxious time from Sunday night until we got to Rosyth about 4 a. m. on Tuesday."

THE BATTLE AS SEEN FROM A DESTROYER

ANOTHER personal glimpse of the Dogger Bank battle is furnished by an officer on the destroyer *Sandfly*. His account was published in the *London Times* a few days after the action:

"We had a beastly night on Saturday; you could not see a thing except at intervals and you had to look out as best you could. Our next ahead's stern light went out and it was an awful job to keep touch with the flotilla. We joined up with the flotilla at 6.50 and at 7 a. m. we sighted some craft in the demi-light on our starboard bow. As the light got better we made out the enemy battle cruisers making our way, and none of us felt very happy as we appeared to be up against a strong force of battle and light cruisers and torpedo craft. I was wet through, having come up quickly without an oil-skin, which I won't do again even though I am a bit late on the forecastle, also suffering a bit from seasickness. I suppose at a pinch one can fight well even though it's on an empty stomach and no sleep and wet through, but I am blowed if you can if you are feeling seasick.

"A bit later we made out some heavy ships on our port side (we were steaming north). These might have been Germans for all we knew in the *Sandfly*. The German ships came on for a bit as we were screening the big ships, being between them and the enemy, but as soon as they caught sight of the *Lion* and that lot they altered course 16 points and made off towards the Fatherland as quick as they could. We could not get at their flotilla, so we had to form astern of our battle cruisers and leave it to them. After this we were only spectators of the fight.

"About 9 a. m. our leading ships fired ranging shots from the fore turrets, but they fell short; about 9.30 it seemed that the enemy were within range, and at 9.45 the *Tiger* and *Lion* seemed to be firing their whole broadsides regularly, and about 10 a. m. the *Lion*, *Tiger*, *New Zealand*, and *Princess Royal* were all in action. It was very hard to see much from where we were as our bridge was washing down, and one could not keep binoculars dry. As far as we could see our shots were straddling them all right, and theirs seemed to be all around our two leading ships, especially the *Tiger*. We could not make out the hits, though we knew some shots must be hitting. The light was very good indeed and just suited us as we could use the superior range of our guns.

GERMAN SHOOTING SEEMED "JOLLY GOOD"

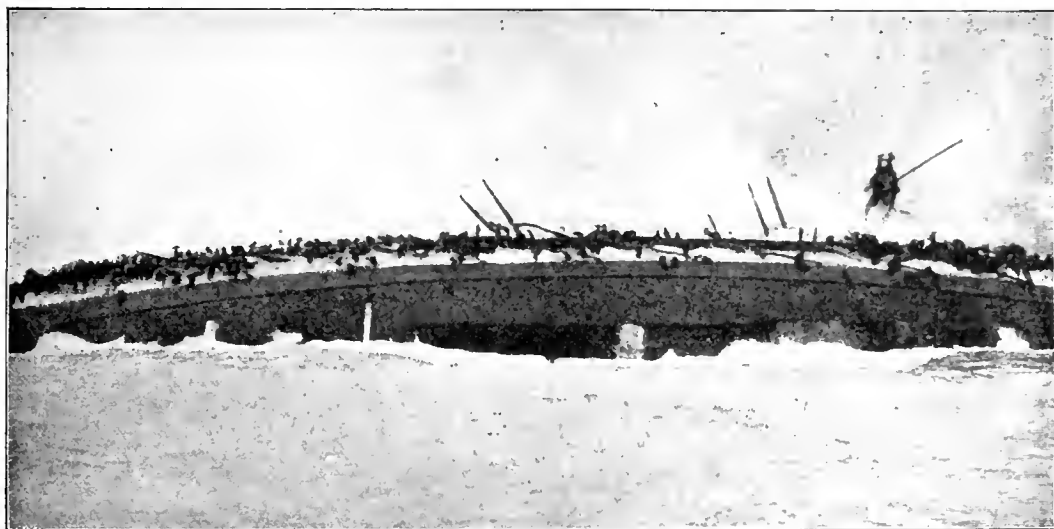
"I can't say I was very impressed with the action, as it looked just the same as any squadron firing one has ever seen in peace time. I have no doubt it was quite exciting enough, though, in the battle cruisers or to anyone who had not seen ships engaged before. At 11.5 we

sighted a Zepp. Our ships seemed to have edged in and headed them off to the northwards a bit. All this time we had been following up astern and only able to look on and watch the flashes and fall of shot. About the progress of the action and damage each side was doing we could tell very little, except that their shooting seemed jolly good.

"At 11.10 we came up to the *Lion*, who had fallen out of the line and was listing a good deal to port. Otherwise she seemed perfectly all

slowly. None of our other ships showed the least signs of having been engaged.

"The destroyers that went on had the most interesting time, as they saw the *Blücher* sink and picked up the survivors. Had bombs dropped at them while doing it. They (our destroyers) say the *Derfflinger* and *Seydlitz* were both badly on fire and awfully badly knocked about, and they wonder how they managed to steam away, but they have 13-inch armor, which must have saved them."



Official Photograph of the *Blücher* Sinking After Capsizing

"The wounded *Blücher* settled down, turned wearily over, and disappeared in a swirl of water."

right. However, she was obviously out of action, and it did not cheer us up at all as, for all we knew, our other three might be getting the worst of it. The first flotilla boats formed a screen round the *Lion* and after this we were out of the fighting altogether, and much to our annoyance we had to let the whole concern drift away to the eastward, spitting out flame and smoke at each other quite in the approved style. Our main care was now guarding the *Lion* from torpedo attack, and we steamed slowly north-west. No one tried to attack us though, as I fancy after Heligoland they are a bit chary of our destroyers. Certainly our new boats are beautiful boats, with three 4-inch guns. The admiral shifted his flag to the *Acheron*. At 2 p. m. the remainder of our ships appeared astern of us and overhauled us, and the *Acheron* as she passed signaled that the *Blücher* was sunk, which bucked us up. Later the *Indomitable* took the *Lion* in tow and all destroyers screened her from submarine attack, and we all steamed home

A WORD-PICTURE OF THE *BLÜCHER*'S AGONY

FOR the crew of the doomed *Blücher* the day was an ever increasing horror of slaughter till the great ship capsized and the survivors were picked up by the British destroyers. One of these survivors gives a vivid picture of the way the battle looked on the decks of the *Blücher*:

"Shots came slowly at first. They fell ahead and over, raising vast columns of water; now they fell astern and short. The British guns were ranging. Those deadly waterspouts crept nearer and nearer. The men on deck watched them with a strange fascination. So one pitched close to the ship and a vast watery pillar, a hundred meters high one of them affirmed, fell lashing on the deck. The range had been found. *Dann aber ging's los!*

"Now the shells came thick and fast with a horrible droning hum. At once they did terrible execution. The electric plant was soon destroyed, and the ship plunged in darkness that could be felt. 'You could not see your hand before your nose,' said one. Down below decks there was horror and confusion, mingled with gasping shouts and moans as the shells plunged through the decks. It was only later, when the range shortened, that their trajectory flattened and they tore holes in the ship's side and raked her decks. At first they came dropping from the skies. They penetrated the decks. They bored their way even to the stokehold.

"The coal in the bunkers was set on fire. Since the bunkers were half empty the fire burned merrily. In the engine-room a shell licked up the oil and sprayed it around in flames of blue and green, scarring its victims and blazing where it fell. Men huddled together in dark compartments, but the shells sought them out, and there death had a rich harvest.

"The terrific air-pressure resulting from explosion in a confined space, left a deep impression on the minds of the men of the *Blücher*. The air, it would seem, roars through every opening and tears its way through every weak spot. All loose or insecure fittings are transformed into moving instruments of destruction. Open doors bang to, and jamb—and closed iron doors bend outward like tin plates, and through it all the bodies of men are whirled about like dead leaves in a winter blast, to be battered to death against the iron walls. . . .

"In one of the engine-rooms—it was the room where the high velocity engines for ventilation and forced draught were at work—men were picked up by that terrible *Luftdruck*, like the whirl-drift at a street corner, and tossed to a horrible death amidst the machinery. There were other horrors too fearful to recount.

"If it was appalling below deck, it was more than appalling above. The *Blücher* was under the fire of so many ships. Even the little destroyers peppered her. 'It was one continuous explosion,' said a gunner. The ship heeled over as the broadsides struck her, then righted herself, rocking like a cradle. Gun crews were so destroyed that stokers had to be requisitioned to carry ammunition. Men lay flat for safety. The decks presented a tangled mass of scrap iron. . . .

ONE CONTINUOUS EXPLOSION

"The *Blücher* had run her course. She was lagging lame, and with the steering gear gone was beginning slowly to circle. It was seen that

she was doomed. The bell that rang the men to church parade each Sunday was tolled, those who were able assembled on deck, helping as well as they could their wounded comrades. Some had to creep out through shot holes. They gathered in groups on deck awaiting the end. Cheers were given for the *Blücher*, and three more for the Kaiser. '*Die Wacht am Rhein*' was sung, and permission given to leave the ship. But some of them had already gone. The British ships were now silent, but their torpedoes had done their deadly work. A cruiser and destroyers were at hand to rescue the survivors. The wounded *Blücher* settled down, turned wearily over, and disappeared in a swirl of water."

BEATTY'S OFFICIAL REPORT

The details of the battle of Dogger Bank are given in the accompanying official report of Admiral Beatty:

H. M. S. *Princess Royal*,

Feb. 2, 1915.

Sir: I have the honor to report that at day-break on Jan. 24, 1915, the following vessels were patrolling in company:

The battle cruisers *Lion*, Capt. Alfred E. M. Chatfield, C. V. O., flying my flag; *Princess Royal*, Capt. Osmond de B. Brock, Aide de Camp; *Tiger*, Capt. Henry B. Pelly, M. V. O.; *New Zealand*, Capt. Lionel Halsey, C. M. G., Aide de Camp, flying the flag of Rear Admiral Sir Archibald Moore, K. C. B., C. V. O., and *Indomitable*, Capt. Francis W. Kennedy.

The light cruisers *Southampton*, flying the broad pennant of Commodore William E. Goodenough, M. V. O.; *Nottingham*, Capt. Charles B. Miller; *Birmingham*, Capt. Arthur A. M. Duff, and *Lowestoft*, Capt. Theobald W. B. Kennedy, were disposed on my port beam.

Commodore (T) Reginald Y. Tyrwhitt, C. B., in *Arethusa*, *Aurora*, Capt. Wilmot S. Nicholson; *Undaunted*, Capt. Francis G. St. John, M. V. O.; *Arethusa* and the destroyer flotillas were ahead.

At 7.25 a. m. the flash of guns was observed south-southeast. Shortly afterward a report reached me from *Aurora* that she was engaged with enemy's ships. I immediately altered course to south-southeast, increased to 22 knots, and ordered the light cruisers and flotillas to chase south-southeast to get in touch and report movements of enemy.

This order was acted upon with great

promptitude, indeed my wishes had already been forestalled by the respective senior officers, and reports almost immediately followed from *Southampton*, *Arethusa*, and *Aurora* as to the position and composition of the enemy, which consisted of three battle cruisers and *Blücher*, six light cruisers, and a number of destroyers, steering northwest. The enemy had altered course to southeast. From now onward the light cruis-

reached 28.5 knots. Great credit is due to the engineer staffs of *New Zealand* and *Indomitable*—these ships greatly exceeded their normal speed.

At 8.52 a. m., as we had closed to within 20,000 yards of the rear ship, the battle cruisers maneuvered to keep on a line of bearing so that guns would bear, and *Lion* fired a single shot, which fell short. The enemy at this time were



© Underwood and Underwood.

The Officers of the *Arethusa*

This British destroyer played an important part in the Heligoland Bight engagement and in the raid on Cuxhaven. Commodore Tyrwhitt is shown in the center.

ers maintained touch with the enemy, and kept me fully informed as to their movements.

The battle cruisers worked up to full speed, steering to the southward. The wind at the time was northeasterly, light, with extreme visibility. At 7.30 a. m. the enemy were sighted on the port bow steaming fast, steering approximately southeast, distant 14 miles.

Owing to the prompt reports received we had attained our position on the quarter of the enemy, and so altered course to southeast parallel to them, and settled down to a long stern chase, gradually increasing our speed until we

in single line ahead, with light cruisers ahead and a large number of destroyers on their starboard beam.

Single shots were fired at intervals to test the range, and at 9.00 a. m. *Lion* made her first hit on the *Blücher*, No. 4 in the line. The *Tiger* opened fire at 9.20 a. m. on the rear ship, the *Lion* shifted to No. 3 in the line, at 18,000 yards, this ship being hit by several salvos. The enemy returned our fire at 9.14 a. m. *Princess Royal*, on coming into range, opened fire on *Blücher*, the range of the leading ship being 17,500 yards, at 9.35 a. m. *New Zealand* was within range of

Blücher, which had dropped somewhat astern, and opened fire on her. *Princess Royal* shifted to the third ship in the line, inflicting considerable damage on her.

Our flotilla cruisers and destroyers had gradually dropped from a position broad on our beam to our port quarter, so as not to foul our range with their smoke; but the enemy's destroyers threatening attack, the *Meteor* and M Division passed ahead of us, Capt. the Hon. H. Meade, D. S. O., handling this division with conspicuous ability.

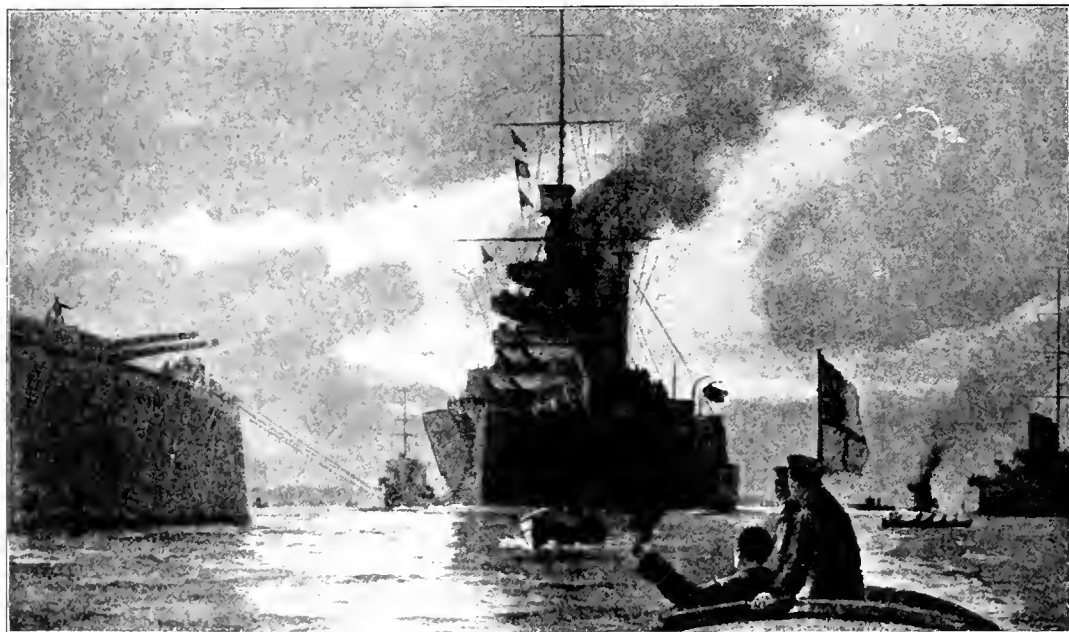
About 9.45 a. m. the situation was as follows:

form a line of bearing north-northwest, and proceed at their utmost speed.

Their destroyers then showed evident signs of an attempt to attack. *Lion* and *Tiger* opened fire on them, and caused them to retire and resume their original course.

The light cruisers maintained an excellent position on the port quarter of the enemy's line, enabling them to observe and keep touch, or attack any vessel that might fall out of the line.

At 10.48 a. m. the *Blücher*, which had dropped considerably astern of enemy's line, hauled out



After the Naval Action Off Dogger Bank, January 24, 1915

Vice-Admiral Beatty's flagship *Lion*, being towed into port after the British victory.

Blücher, the fourth in their line, already showed signs of having suffered severely from gun fire; their leading ship and No. 3 were also on fire. *Lion* was engaging No. 1, *Princess Royal* No. 3, *New Zealand* No. 4, while the *Tiger*, which was second in our line, fired first at their No. 1, and when interfered with by smoke, at their No. 4.

The enemy's destroyers emitted vast columns of smoke to screen their battle cruisers, and under cover of this the latter now appeared to have altered course to the northward to increase their distance, and certainly the rear ships hauled out on the port quarter of their leader, thereby increasing their distance from our line. The battle cruisers, therefore, were ordered to

to port, steering north with a heavy list, on fire, and apparently in a defeated condition. I consequently ordered *Indomitable* to attack enemy breaking northward.

At 10.54 a. m. submarines were reported on the starboard bow, and I personally observed the wash of a periscope two points on our starboard bow. I immediately turned to port.

At 11.03 a. m. an injury to the *Lion* being reported as incapable of immediate repair, I directed *Lion* to shape course northwest. At 11.20 a. m. I called the *Attack* alongside, shifting my flag to her at about 11.35 a. m. I proceeded at utmost speed to rejoin the squadron, and met them at noon retiring north-northwest.

I boarded and hoisted my flag on *Princess*

Royal at about 12.20 p. m., when Capt. Brock acquainted me of what had occurred since the *Lion* fell out of the line, namely, that *Blücher* had been sunk and that the enemy battle cruisers had continued their course to the eastward in a considerably damaged condition. He also informed me that a Zeppelin and a seaplane had endeavored to drop bombs on the vessels which went to the rescue of the survivors of *Blücher*.

At 2 p. m. I closed *Lion* and received a re-

port that the starboard engine was giving trouble owing to priming, and at 3.38 p. m. I ordered *Indomitable* to take her in tow, which was accomplished by 5 p. m.

The greatest credit is due to the Captains of *Indomitable* and *Lion* for the seamanlike manner in which the *Lion* was taken in tow under difficult circumstances.

(Signed) DAVID BEATTY,
Vice Admiral.

TOLD BY A MIDSHIPMAN

His Long Midnight Swim for Life When the Turks Torpedoed a British Battleship at the Dardanelles

ONE phase of the Dardanelles naval campaign we have already seen in the splendid exploits of British submarines. Of the battleship point of view, the following narrative of a young British midshipman in *From Dartmouth to the Dardanelles* is a very human document. The account describes an event all too frequent with the attacking fleet, British and French—the sinking of a great battleship at night by mine or submarine. The name of the ship is withheld, but the experience is probably characteristic of all that suffered the same fate.

"Crash! Bang! Cr-r-rash! I woke with a start and sitting up in my hammock, gazed round to see what had so suddenly roused me. Some of the midshipmen were already standing on the deck in their pyjamas—others, like me, were sitting up half dazed with sleep. A party of ship's boys crowded up the ladder from the gun room flat, followed by three officers; one of these, a sub-lieutenant, R. N. R., called out: 'Keep calm, and you will all be saved.'

"Up to that moment it had never dawned upon me that the ship was sinking, and even then I thought it improbable until I noticed that we were already listing to starboard. Then I got up and walked up the hatch to the quarter deck. The ship was now heeling about five degrees to starboard and I climbed up the port side. It was nearly pitch dark. A seaman, rushing to help lower the boats, charged into me, and I turned and swore at him.

"Gradually a crowd gathered along the port side. 'Boat ahoy! Boat ahoy!' they yelled; but,

as the ship listed more and more, and there was no sign or sound of any approaching vessel, the men's voices seemed to get a bit hopeless. The commander was urging on a gang who were trying to get some heavy timber overboard; but, as we listed further and further over, they found it impossible to get it up on the port side and couldn't get round to starboard as the capstan and the Captain's hatch and skylight were in the way. At last they gave it up, and going to the side, joined their voices to those of the crew who were trying to attract the attention of any vessel that might be in the vicinity.

WHEN THE BATTLESHIP HEELED OVER

"Inside the ship everything which was not secured was sliding about and bringing up against the bulkheads with a series of crashes. Crockery was smashing—boats falling out of their crutches—broken funnel guys swinging against the funnel casings. She had heeled over to about twenty degrees, then she stopped and remained steady for a few seconds. In the momentary lull the voice of one of our officers rang out steady and clear as at 'divisions': 'Keep calm, men. Be British.'

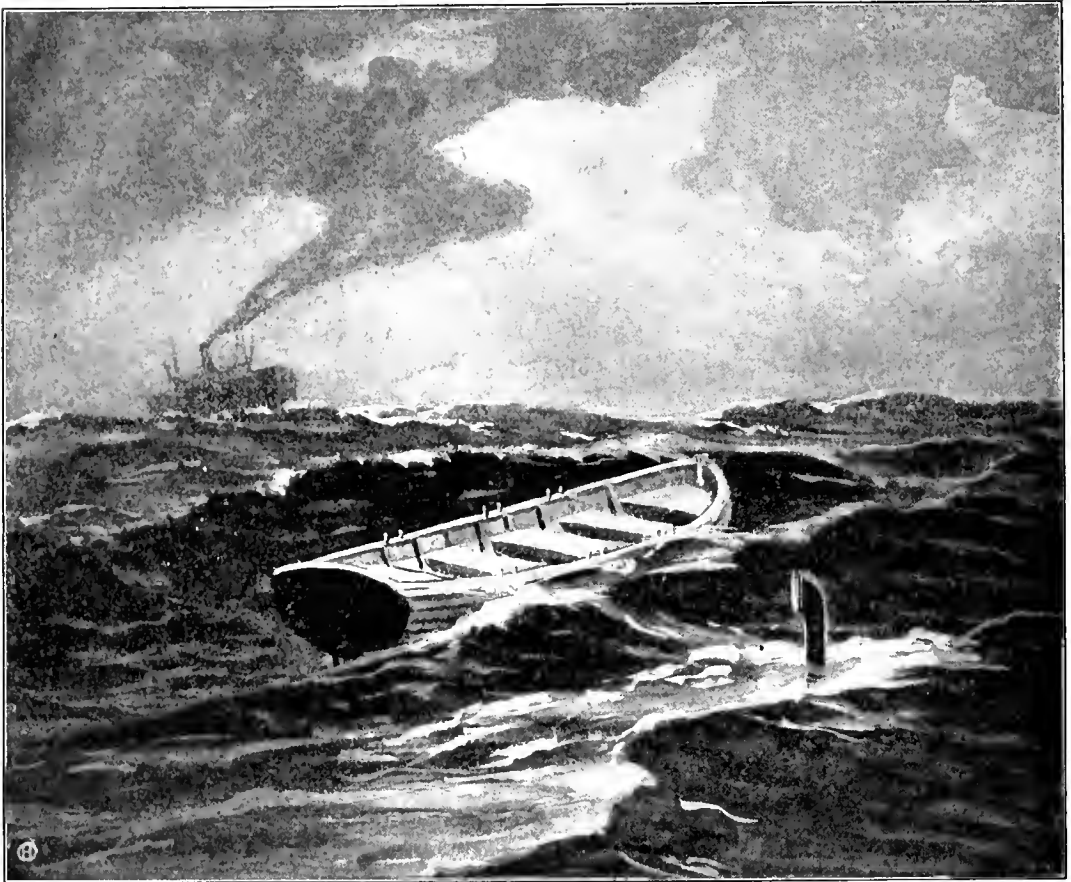
"Then the ship started to heel rapidly again, and I felt sure there was no chance of saving her. I turned to jump overboard. The commander, who was standing a few paces away on my right, went over a second before me. Raising my arms above my head, I sprang well outboard and dived. Just before I struck the water my face hit the side of the ship. It was a horrid feeling, sliding with my face down the slimy side, and a second later I splashed in with

tremendous force, having dived about thirty feet.

"Just as I was rising to the surface again a heavy body came down on top of me. I fought clear and rose rather breathlessly and bruised. I swam about fifty yards away, to get clear of the suction when the ship went down; then, turning round and treading water, I watched

A MIDNIGHT SWIM IN THE DARDANELLES

"Turning over and swimming a slow side stroke, I made for H. M. S. *Cornwallis*, which I could discern faintly silhouetted against the sky about two and a half miles distant. Suddenly something touched my leg, and the thought of the sharks we had watched from the bridge the



© Scientific American.

A Common U-Boat Deception

A method tried by the German U-boat commanders was to hide the periscope behind a rowboat. In this manner a passing freighter was lured on, in the belief that the rowboat contained survivors. The U-boat was then in a position to attack the freighter at close range.

her last moments. The noise of crashing furniture and smashing crockery was continuous. Slowly her stern lifted until it was dimly outlined against the deep midnight sky. Slowly her bows slid further and further under until, with a final lurch, she turned completely over and disappeared, bottom upward, in a mass of bubbles.

"She had been our home for nearly ten months—she was gone—vanished—in less than four minutes.

previous afternoon flashed shudderingly across my mind—but it was only a floating potato! Soon the shrieks of the drowning grew faint in the distance, and I swam on with three others near me. When I had been in the water about twenty minutes I looked up and saw what I thought to be a boat. I shouted out, 'Boat ahoy!'—and turning on my side swam for some time a fast side stroke. When at last I rested and looked for the imagined boat, which ought to have been

quite near by now, I discovered that I had somehow misfocused the *Cornwallis*,* and so come to imagine she was a small steamboat, quite close, instead of a battleship. However, I felt confident of reaching her if only I persevered, so I continued to swim a slow side stroke.

"Soon after this my pyjama jacket came undone and I took it off as it hindered me. A few minutes later I sighted a huge spar, about twenty feet long, probably the topgallant mast or lower boom from our ship. It must have been thrown a tremendous way by the force of the explosion to be so far down the channel. The current was very strong and of course that was a great help to those who were swimming. I hung on to the spar for a minute or two to get my breath back a bit, and rubbed myself all over to restore circulation, as by that time I was getting very cold. After a short rest I started off again to try to reach H. M. S. *Cornwallis*.

"Presently it seemed to me that I was not approaching her as rapidly as before, and almost at the same moment she switched on her searchlights, when I saw by their light that she was out of the main stream of the current and that I should have to reach her half a mile absolutely unaided by the flow of the tide. I tried to get in the beam of her searchlight, thinking she would be sure to have some boats out and they would be sure to see me; but I found I was unable to manage this, and after about five minutes I gave up trying.

"Then I turned round and looked about for some other ship to make for. About a quarter of a mile behind me, and slightly up stream, I saw another ship with all her searchlights going, and I determined to try and reach her. I swam towards her, and presently saw two steamboats push off from her bow and make off up stream to the scene of the disaster, but they were too far off to hail. Five minutes later I heard the welcome splash of oars, and looking to my left saw a cutter approaching with a man in the bows sweeping the surrounding water with a hand lantern. I yelled out, 'Boat ahoy!' and back came the cheery answer: 'All right, we're coming, hang on!'

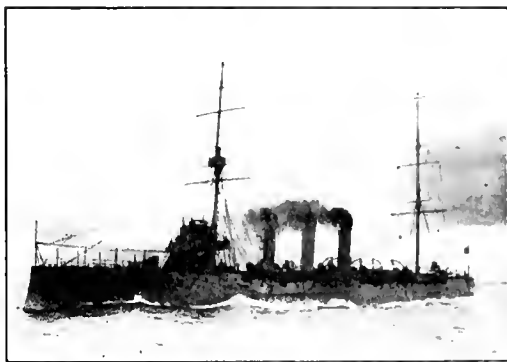
"A few minutes later the lantern flashed in my face, a pair of strong arms grasped me by the shoulders and hauled me clear of the water.

"I must have fainted then, for I remember nothing more until I became dimly conscious as in a dream that I was in the stern sheets of a boat lying alongside some other vessel. A man's voice said, 'Here's a midshipman, sir,' and next moment I was picked up and set down on deck.

"A JOLLY SMART PIECE OF WORK"

"Barely conscious as yet of my surroundings, I was taken into a sort of cabin, where I was given some neat rum. It was very fiery and nearly choked me, but it bucked me up a bit all the same. Then I was conducted down to the boiler room, where some one stripped off my pyjama trousers (my one remaining garment) and I sat down on a locker before the furnace and soon got a degree of warmth into my body.

"Presently I heard the voice of one of our lieutenants speaking up above and called out to him to know how he had come off. Then I was helped up the gangway again and into a small sort of saloon in the stern. Here I was given



© Underwood and Underwood.

The British Cruiser *Amethyst*

During the night of March 13, 1915, this battleship made a brilliant dash up the Dardanelles, and cut the cable between the forts on the European and Asiatic sides.

some more rum, a very large sweater, and a pair of blue serge trousers belonging to one of the crew, and when I had put them on I lay down in a bunk and immediately fell asleep. About an hour later I woke up and found the saloon full of officers and men.

"The lieutenant to whom I had spoken in the boiler room was sitting at the table. I.e was dressed in a jersey and a seaman's duck trousers. Two other survivors, a marine and an armorer, were also at the table; and across the saloon, in a bunk opposite mine, lay a gunner's mate. I asked the lieutenant what time our ship was struck. He said his watch had stopped at 1.29 a. m., when he jumped into the sea, and so he presumed we were torpedoed about 1.27, as the ship took only *three and a half minutes* to go down. She had been struck on the starboard side by three torpedoes fired by a Turkish torpedo boat, which had drifted down the Straits, keeping close inshore. To give the enemy his due, it was a jolly smart piece of work."

* A fictitious name.

STORIES OF THE JUTLAND BATTLE

British and German Eye-witness Accounts of the Greatest Naval Battle of History

AS a study in strategy and tactics the battle of Jutland has already been discussed among the major operations. As a human experience it is impossible to get more than fragments here and there, because the battle was flung out along so many miles of sea, there were so many widely separated elements—destroyers, cruisers, battleships—that no one ever saw the whole battle, and the conditions of mist and twilight in the later stages made it still more difficult for any one of the participants to visualize more than the part played by his own ship. Hence the following narratives reveal only small bits of the fighting, but they are valuable as eye-witness accounts of an historic event of ever-thrilling interest.

STORY OF THE *LÜTZOW*—TOLD BY A SURVIVOR

The German battle cruiser *Lützow*, of 28,000 tons, was so badly disabled in the action that she went down while trying to escape. One of her survivors, named Krug, wrote a pamphlet which appeared at The Hague, the first account of the battle of Jutland from the point of view of the German sailor. The narrative from the time the German High Sea Fleet found itself in contact with the British Grand Fleet and turned away to escape, runs thus:

"Suddenly the entire ship is roughly shaken. The colossus heaves far over, and everything that is not fixed is upset. The first direct hit! The torpedo pierces the forepart of the ship. Its effects are terrible. Iron, wood, metal, parts of bodies, and smashed ships' implements are all intermixed, and the electric light, by chance spared, continues to shine upon this sight.

"Two decks lower, in the *Diesel* dynamo room, there is still life. That compartment has not been hit, and twenty-seven men, in the prime of life, have been spared, but the chamber is shut

off from all others, for the water is rushing into all sections. They are doomed to death. Several 38-centimeter shells squarely hit their mark, working terrible havoc. The first hit the wireless department. Of the twelve living men who a moment ago were seated before the apparatus, there is nothing more to be seen. Nothing is left but a smoking heap of ruins. The second shot again pierced the forepart of the ship. The entire forepart of the vessel, as far as the *Diesel* motor room, was past saving.

"Another broadside meant for the *Lützow* fell short, but a torpedo boat close by disappeared, leaving only a few odd pieces of wood and a smashed lifeboat drifting around. It is now half-past 7, and the hostile circle grows ever smaller. The *Lützow* and the *Seydlitz* lie with their bows deep in the water; both are badly mauled. The forepart of the *Lützow* was in flames. Shells burst against the ship's side in rapid succession. A terrible sight is presented on board the *Lützow*, and it needs iron nerves to look upon it coolly. Hundreds have lost their lives, while many have lain for hours in torture, and the fight is not yet over. The bow is now crushed in and is entirely submerged. The four screws are already sticking half out of the water, so that the *Lützow* can only make eight to ten knots an hour, as against the normal thirty-two.

"The Admiral decides to transfer to the *Moltke*. He gives orders to turn and get away from the scene of the fight, but the *Lützow* has not gone a mile before she receives a broadside of 38-centimeter shells. The entire ship was filled with the poisonous fumes of the shells, and any one who failed to affix his gas mask was doomed to be suffocated.

LIKE A SHIP OF THE DEAD

"It was three-quarters of an hour before the lighting installation was restored. Then for the first time could the extent of the damage wrought by the salvo be seen. One of the shells had landed in the sick bay. Here there were only three doctors and fifteen attendants, besides 160 to 180 wounded. Of all those, only four

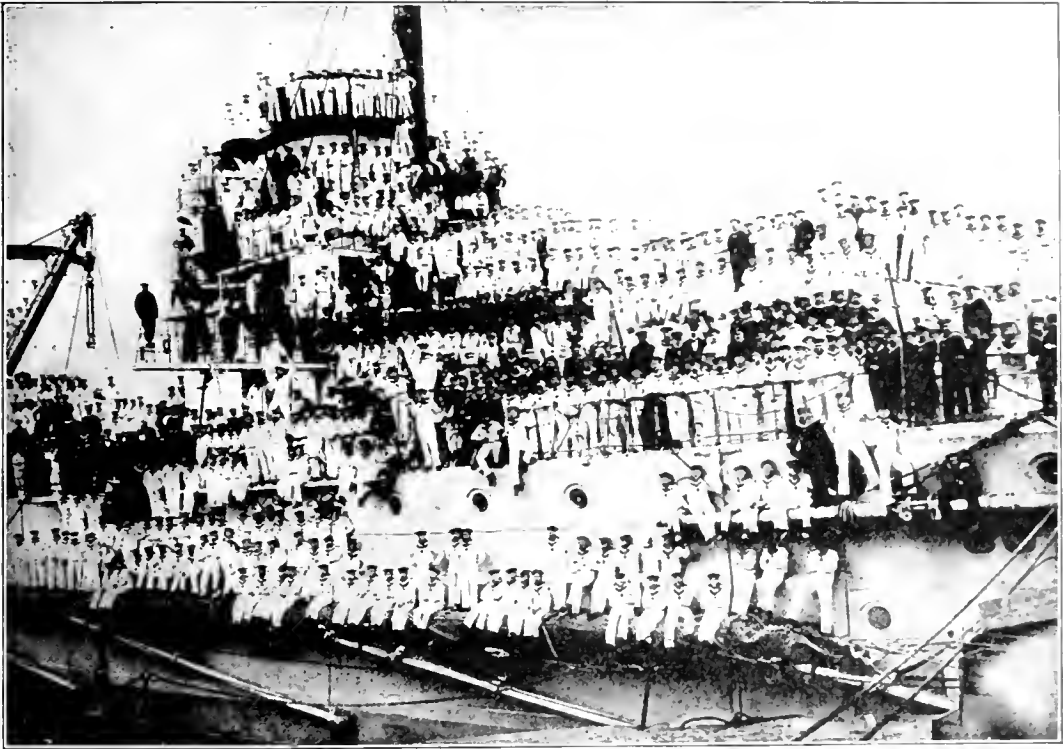
remained alive. These four were hurled into the next compartment by the air pressure; there they lay unconscious.

"The *Lützow* was now a complete wreck. Corpses drifted past. From the bows up to the first 30-centimeter gun turret the ship lay submerged. The other gun turrets were completely disabled, with the guns sticking out in all directions. On deck lay the bodies of the sailors in their torn uniforms, in the midst of the

But at 3 o'clock in the night news of the approach of two British cruisers and five destroyers was received and just at that critical time the fore and middle bulkheads gave way.

WOUNDED LEFT ON BOARD TO DROWN

"Orders were given to quickly carry the wounded to the stern. Then the order rings out: 'All hands muster in division order abaft.'



© Underwood and Underwood.

The Crew of the *Moltke*

This German battle cruiser was of 22,600 tons displacement with an indicated horse-power of 86,900. Her keel was laid in 1910 and she was completed in 1911. She was equipped with 12 3.4-inch guns and 4 torpedo tubes. Her average speed was 28 knots an hour. She carried a complement of 1,013 men and officers.

empty shell cases. From the masts fluttered torn flags, twisted signal lines, and pieces of wire of the wireless installation. Had not the lookout man and the three officers on the commander's bridge given signs of life, the *Lützow* would have truly resembled a ship of the dead. Below, on the battery deck and in the coal bunkers, there still lay innumerable wounded, but there was no longer a doctor to attend to them.

"Night came on and hope was entertained of getting away without a further encounter.

A tumult arises on the lower deck, for everybody is now bent on saving his life. It is impossible in that short space of time to bring up all the wounded, for they are scattered everywhere. Eighteen men had the good fortune to be carried up, but all the rest who could not walk or crawl had to be left behind.

"The twenty-seven men shut up in the Diesel dynamo chamber had heard the order through the speaking tube, for many, mad with anguish, screamed through the tube for help, and it was learned that two of their number lay bound

because they had become insane. Inspired by their sense of duty, these sealed-up men had continued to carry on their work in order to provide the ship with light.

"The torpedo boats now quickly took off the crew of the *Lützow*, and those left behind were doomed to death. It was resolved that no piece of the vessel should fall into the enemy's hands. An order was given and a torpedo cleft the waters. Just then seven men were to be seen running like madmen round the rear deck. Over-fatigued as they were, they had apparently dropped off to sleep and only just awakened. As the torpedo exploded, the *Lützow's* bow quickly dipped, and the stern rose until she stood on end. Then she heeled over and sank, forming a great whirlpool that carried everything within it into the depths.

"When the roll was called it appeared that there were 1,003 survivors of the *Lützow*; 597 men had perished in the battle."

JUTLAND BATTLE AS SEEN BY THE BRITISH

FROM the British side the following bits of testimony were pieced together in the *Weekly Despatch* soon after the battle:

"We came upon them rather suddenly. They opened fire upon us, and never in all my life have I heard such a terrific din. The first four minutes of the battle saw most of the damage done to our big ships. I saw the *Queen Mary* and the *Indefatigable* go down. It would be wrong to say the *Queen Mary* went down; she went up. She must have taken two or three broadsides right into her, and some of the shells must have landed in the magazines, for the great vessel went up in pieces into the air. . . ."

An officer in one of the squadron of fast battleships gave *The Times* not only some interesting facts, but mentioned the time when certain phases of the battle began. He stated that the fast battleships were astern of the battle cruisers, and opened fire within 10 or 20 minutes of their first shots. He writes:

"At 3.45 p. m. on May 31 'Action Stations' were sounded off by the buglers, and this was the first indication vouchsafed to us that anything out of the common was about to take place. . . . The guns were loaded, and then round trained the turret on to our first target, a small light cruiser nearer to us than is healthy

for such craft. 'Fire!' An eternity—and then, bang, and away goes our first salvo. The shots fell near the enemy, but she scuttled away. We let her have another salvo, then ceased fire, and turned our attention to bigger game that was now within range—the German battle cruisers. . . .

"Now we all of us got going hard. The battle cruisers and ourselves against the German battle cruisers and the German High Seas fleet, which had now put in an appearance. So in spite of the stories of the Germans they were most undoubtedly considerably superior to the British force present, and remained so until the arrival of the Grand Fleet some hours later. . . . We were at this time receiving a very heavy fire indeed, our own battle cruisers having become disengaged for 20 minutes to half an hour, so that the fire of the whole German fleet was concentrated on us. Especially unpleasant was a period of half an hour, during which we were unable to see the enemy, while they could see us most clearly. Thus we were unable to fire a shot, and had to rest content with steaming through a tornado of shell fire without loosing off a gun, which was somewhat trying.

STRAIGHT INTO A HELL OF FIRE

"However, about 6.30 the sun silhouetted up the Germans, and completely turned the tables as far as light was concerned, and for a period of some 20 minutes we gave them a most terrific dressing down, which we trust they will remember. Then down came the mist again, and we had to close them to four miles in the attempt to see the enemy, and four miles is, of course, about as near as one likes to get to the foe, as torpedoes then come into play. It was at this stage that, owing to some temporary defect, the *Warspite's* helm jammed, and she went straight at the enemy into a hell of fire. She looked a most wonderful sight, every gun firing for all it was worth in reply. Luckily, she got under control quickly and returned to the line, and it was this incident which gave rise to the German legend that she had been sunk."

The impressions of an officer in a torpedo-boat destroyer were given in *The Times*. After describing the battle during the afternoon, and that of the night which followed it, he writes:

"Then came the dawn—just the first sign of it—a very grey, misty morning, and out of the

mist loomed up a squadron of great German dreadnoughts. Off we went with our flotillas full speed to attack, but we, being on the outer flank, missed our attack, and so on we went all by ourselves for a way, and then round again to see what we could do. We closed them and closed them, and yet they apparently could not see us. Then, bang—off went one of our torpedoes, and round we turned and gave them two more, and then they saw us and we had a 'merry hell' for a bit. However, we stuck it and watched, and then to our joy from one of their ships leaped a huge flame higher than her masts—a terrific explosion, and red-hot fragments leaped sky-high, and after that no sign of her at all, although we still saw the others. So she was done for."

THE FIGHT AS SEEN FROM THE FORETOP

A DELIGHTFULLY boyish impression is given by a midshipman aboard one of the British battleships:

* "We were all as cheery as Punch when action was sounded off. The battle cruisers, which, by the way, were first sighted by your eldest son, who went without his tea to look out in the foretop, were away on the bow, firing like blazes, and doing a colossal turn of speed. I expect they were very pleased to see us. The battle fleet put it across them properly. We personally 'strafed' a large battleship, which we left badly bent, and very much on fire. They fired stink shells at us, which fortunately burst some distance away. They looked as if they smelt horrible. We engaged a Zepp which showed an inclination to become pally. I think it thought we were Germans. Altogether it was some stunt.

"Yes, you were right, I was up in the foretop and saw the whole show. I told you I was seventeen hours up there, didn't I? Simply bristling with glasses, revolvers, respirators, ear-protectors, and what-nots. I cannot imagine anything more intensely dramatic than our final junction with the battle cruisers. They appeared on the starboard bow going a tremendous speed and firing like blazes at an enemy we could not see. Even before we opened first the colossal noise was nearly deafening. The Grand Fleet opened fire. We commenced by 'strafing' one of the 'Kaisers' that was only just visible on the horizon, going hell for

leather. The whole High Seas Fleet was firing like blazes.

PROJECTILES SCREECHING OVERHEAD

"It is the most extraordinary sensation I know to be sitting up there in the foretop gazing at a comparatively unruffled bit of sea, when suddenly about five immense columns of water about a hundred feet high shoot up as if from



Commodore Tyrwhitt

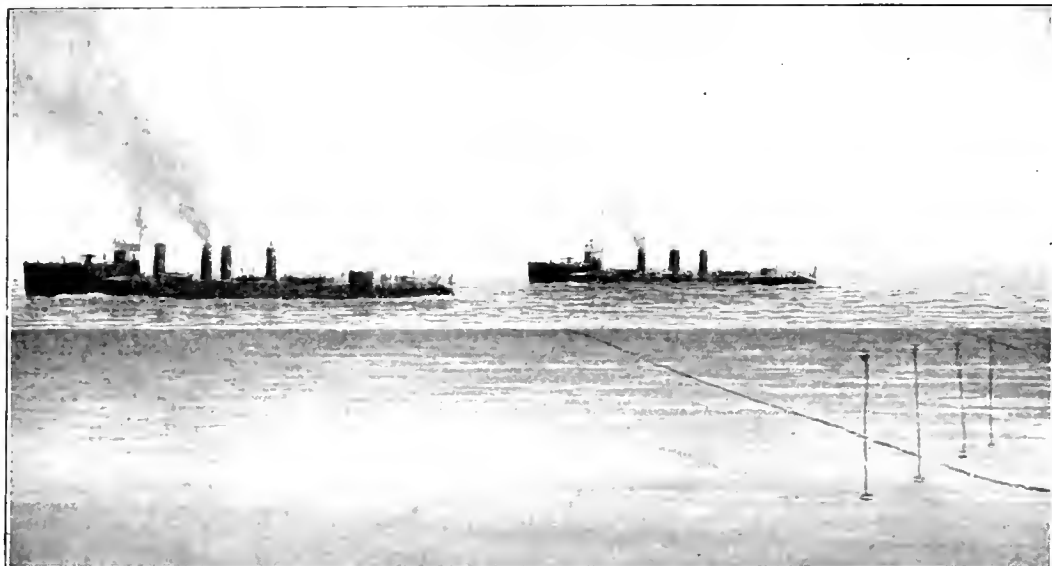
He was in chief command of the British destroyer flotillas during the war.

nowhere, and bits of shell go rattling down into the water, or else, with a noise like an express train, the projectiles go screeching overhead and fall about a mile the other side of you. You watch the enemy firing six great flashes about as many miles away, and then for fifteen seconds or so you reflect that there is about two tons of sudden death hurtling toward you. Then with a sigh of relief the splashes rise up, all six of them, away on the starboard bow. On the other hand, there is a most savage exultation in firing at another ship.

* *The British Navy at War*, by Dixon.

"You hear the order 'Fire!' The foretop gets up and hits you in the face, an enormous yellow cloud of cordite smoke—the charge weighs two thousand pounds—rises up and blows away just as the gentleman with the stop-watch says, 'Time!' and then you see the splashes go up, perhaps between you and the enemy, behind the enemy, perhaps, or, if you are lucky, a great flash breaks out on the enemy, and when the smoke has rolled away you just have time to see that she is well and truly blazing before the next salvo goes off.

missed my tea. I wish you could have seen the state we were in between the decks. Water everywhere, chairs, stools, radiators, tin baths, boots, shoes, clothes, books, and every conceivable article, chuckled all over the place. We didn't care a fig, because we all thought of 'Der Tag' on the morrow which we all expected. Destroyers and light cruisers were attacking like fury all night, and when I got up at the bugle 'Action!' at 2 a.m. I felt as if I had slept about three and a half minutes. At about 3 a.m. we sighted a Zepp, which was



© Scientific American.

Mine-Sweeping

Mine-sweeping is carried on in the manner shown in this drawing. A pair of trawlers or destroyers, hauling a cable loop between them, steam slowly over the area to be cleared. The mines are in this way torn from their moorings and then rise to the surface, where they are exploded by gun fire. Sometimes the mines explode when striking the cable.

"I had the extreme satisfaction of seeing the *Lützow* get a salvo which must have caused her furiously to sink. There are minor side-shows, too, which contribute greatly to the excitement.

"We also discharged our large pieces at the *Rostock*, but she was getting such a thin time from somebody else that we refrained from pressing the question. Her mainmast and after-funnel had gone. She was quite stationary, and badly on fire. We sighted submarines, two in number, and also large numbers of enemy destroyers, one of which we soundly 'strafed.' So soundly, in fact, that it gave up the ghost. . . .

"Well, when I climbed down from the foretop late that night I was as black as a nigger, very tired, and as hungry as a hunter, I having

vigorously fired at. It made off *quam celerrime*, which means quick work with a capital Q."

GREAT WORK BY THE *WARSPITE*

ANOTHER angle of the great battle is afforded by the account of an officer on the British cruiser *Warrior*, which suffered heavily and was gallantly rescued by the *Warspite*, only to sink after being towed ten hours. The story appeared in the *New York Times*. This officer says:

"The first German ship sighted by the *Warrior* was a light cruiser with three funnels, the

Warrior picking it up at a range of 1,585 yards.

"All at once a fountain of water rose twenty yards ahead of us, and we then knew that we had to deal with something bigger than light cruisers. Three shells of at least twelve-inch caliber fell ahead of the *Defence*, and three seconds later a salvo cut her in two amidships and she crumpled up and sank. The *Black Prince* was the next to go. Two great shells carried away her funnels and fore turret. Then a salvo hit her in the magazine and blew her up.

"Our turn was to come, for far away on the horizon we could see three tripod masts. By this time the enemy light cruisers were burning fiercely and had ceased to fire, but, one after another, 12-inch shells dropped on either beam of us. At last the enemy found the mark. The first shell smashed the motor-boat hoist into splinters. The second hit the starboard side in line with the turret. The third hit the quarter-deck just abaft the bulkhead door, plunged downward and wrecked the dynamo. The gun turrets too were almost useless, as the ammunition hoist was gone. Another shot put the

port and starboard engine-rooms out of action.

"By 6.30 o'clock we were a hopelessly battered hulk and waiting for the shells that would finish us, when the *Warspite* appeared and passed between us and the enemy, engaging the foremost battle cruiser with deadly effect.

"The first shot from the *Warspite* lopped off the foremast of the leading enemy battle cruiser. The next overturned both the fore gun turrets, and in five minutes the enemy vessel was ablaze from end to end, enveloped in a cloud of dense smoke. The second battle cruiser which had been concentrating her fire on the *Warspite* turned to starboard, smoke belching from her funnels, and endeavoring to pick up her main squadron. But it was not to be. Two shells from the *Warspite* blew every funnel she had to pieces. The third made a great rent in her stern. The fourth plowed up her deck and burst against her foremast, bringing it down.

"Two minutes afterward this vessel also was on fire and heeling over, with the *Warspite* still pounding her and ripping great gashes in her starboard side and bottom. The last we saw of her was nothing more than a broken hulk."

THE RAID ON ZEEBRUGGE

A Naval Exploit of the Most Daring Kind Successfully Carried Out by British Marines and Bluejackets

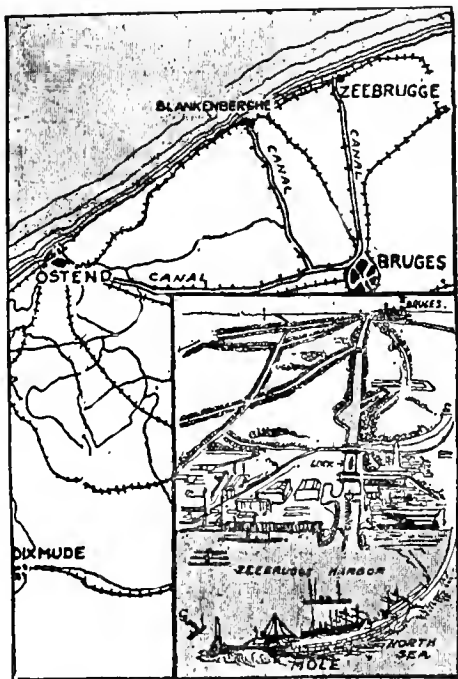
AS a naval operation the attack on Zeebrugge is to be classed as "minor." It was not on a grand scale, and its consequences were not decisive. Nevertheless from the point of view of human interest it is the finest thing on the naval side in the war. In this respect the major operations cannot compete with it. The Falklands battle was too one-sided, that of Jutland unsatisfactory in outcome. It is not from these that the future navy will take inspiration, but from an exploit like the attack on Zeebrugge, small in scale and in its bearing on the war, perhaps, but perfect in its conception and preparation and magnificent in its execution. This is the sort of thing that shoves tradition one notch higher.

Early in the war, in the autumn of 1914, the Belgian port of Zeebrugge was captured by the Germans, along with the watering resort of Ostend a few miles further to the west,

and the two places were transformed into important bases for destroyers, submarines, and aircraft. Lying almost under the shadow of the English cliffs, these bases became a constant source of attack by air and sea. After the capture of Antwerp the Germans used the shipbuilding plants there to construct U-boats and destroyers which could be safely sent to Zeebrugge and Ostend via Bruges and the canals that ran from that city to the two towns on the coast. Subsequently, throughout the war the city of Dunkirk became a martyr to the giant artillery placed at Ostend and the aerial forces based there. And as the submarine campaign grew in deadly effectiveness, the port of Zeebrugge became more and more a menace to the safety of England.

It is one of the unanswered questions of the war why the British permitted the Ger-

mans to establish themselves so strongly at these two strategic points on the Belgian coast. When they came in 1914 there was not a gun or a field work; when the attack was made in 1918 the coast was studded with guns and earthworks, the mole itself transformed into a fortress with every device of searchlights, star shells, artillery, etc., to repel attack. The task of blocking the port in 1914 would have been infinitely easier and cheaper in human life than it proved in 1918.



Submarine Bases at Zeebrugge

Which were blocked by the British in a daring raid.

Admiral Jellicoe, at any rate, realized the importance of destroying the Zeebrugge base early in the war, and on his return to the Admiralty he called Vice Admiral Keyes to the task of organizing and carrying out a naval attack. It was not, however, till April, 1918, that the expedition was ready.

PLANNING THE ATTACK IN ADVANCE

There is no natural harbor at Zeebrugge. Instead a stone mole 30 feet high sweeps in crescent form seaward and eastward, forming a protection for the mouth of the Bruges

canal. The channel of this canal is narrow and constantly filling with sand under the best conditions. As the object of an assault on the place was to ruin this canal, it was thought feasible to sink two old cruisers, loaded with concrete, at its mouth, across channel, leaving the sand-laden tides to complete the work. At Ostend there was a double mole forming the entrance to the inner harbor, and here also obsolete ships laden with concrete were to be sunk athwart the channel.

Six old cruisers were selected for the work: *Brilliant*, *Iphigenia*, *Sirius*, *Intrepid*, *Thetis* and *Vindictive*. The first five were to be sunk as block ships, the last, assisted by two ferry boats, *Iris* and *Daffodil*, was to carry the storming party to the Zeebrugge mole, to silence the guns there and destroy the submarine and airplane depots on it, while the block ships took their stations. Meanwhile an old submarine was to work its way under the viaduct connecting the mole with the shore and there be blown up. Thus the plan comprised three coördinating operations. A large number of monitors were to bombard the shore defenses as a diversion, motor launches were to run in and carry away the crews of the sunken cruisers and the submarine, and a heavy smoke screen was to be raised to veil the ships as they came into close quarters. Without this protection none of the vessels could have survived the gunfire that would be directed upon them long before they reached the mole. Consequently everything depended on a favorable wind that would drive the smoke upon the town and the mole. The treacherous wind shifted after the expedition was under way on one occasion and on the final night it suddenly changed. The shift was felt first by the Ostend party and came so early as to foil that assault. But at Zeebrugge it came a little later, after the approach had been successfully made.

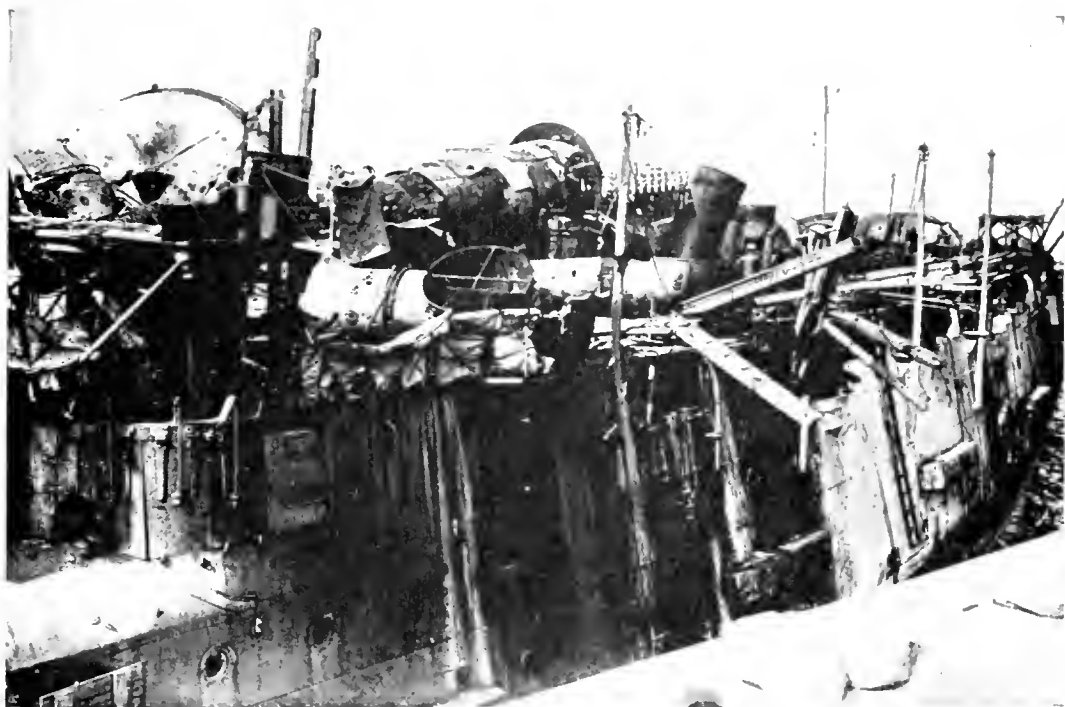
THE OFFICIAL ACCOUNT OF THE ZEEBRUGGE AFFAIR

ON the 25th of April the Admiralty issued a full report of the Zeebrugge affair. It runs, in part, as follows:

The night was overcast and there was a drifting haze. Down the coast a great searchlight

swung its beam to and fro in the small wind and short sea. From the *Vindictive's* bridge, as she headed in toward the mole, with the faithful ferryboats at her heels, there was scarcely a glimmer of light to be seen shoreward. Ahead, as she drove through the water, rolled the smoke screen, her cloak of invisibility, wrapped about her by small craft. This was

shells. The wavering beams of the searchlights swung around and settled into a glare. A wild fire of gun flashes leaped against the sky, strings of luminous green beads shot aloft, hung and sank. The darkness of the night was supplemented by a nightmare daylight of battle-fired guns and machine guns along the mole. The batteries ashore awoke to life.



L. Maassmatt

The Deck of the *Vindictive* After the Zeebrugge Raid

She took the leading part in the finest naval exploit of the war. Her men literally gave their lives to achieve a daring feat—the blocking of the canal at the Zeebrugge submarine base under the direct fire of German batteries.

the device of Wing Commander Brock, without which, acknowledges the Admiral in command, the operation could not have been conducted.

A northwest wind moved the volume of it shoreward ahead of the ships. Beyond it was the distant town, its defenders unsuspecting. It was not until the *Vindictive*, with bluejackets and marines standing ready for landing, was close upon the mole that the wind lulled and came away again from the southeast, sweeping back the smoke screen and laying her bare to eyes that looked seaward.

There was a moment immediately afterward when it seemed to those on the ships as if the dim, coast-hidden harbor exploded into light. A star shell soared aloft, then a score of star

STORMING PARTY LAND ON THE MOLE

It was in a gale of shelling that the *Vindictive* laid her nose against the thirty-foot high concrete side of the mole, let go her anchor and signaled to the *Daffodil* to shove her stern in.

The *Iris* went ahead and endeavored to get alongside likewise. The fire was intense, while the ships plunged and rolled beside the mole in the seas, the *Vindictive* with her greater draught jarring against the foundations of the mole with every lunge. They were swept diagonally by machine-gun fire from both ends of the mole and by the heavy batteries on shore.

Commander (now Captain) Carpenter conned the *Vindictive* from the open bridge until her

stern was laid in, when he took up his position in the flame-thrower hut on the port side. It is marvelous that any occupant should have survived a minute in this hut, so riddled and shattered is it.

The officers of the *Iris*, which was in trouble ahead of the *Vindictive*, describe Captain Carpenter as handling her like a picket boat. The *Vindictive* was fitted along her port side with a high false deck, from which ran eighteen brows or gangways by which the storming and demolition parties were to land.

The men gathered in readiness on the main lower decks, while Colonel Elliott, who was to lead the marines, waited on the false deck just abaft the bridge. Captain Halahan, who commanded the bluejackets, was amidships. The gangways were lowered, and they scraped and rebounded upon the high parapet of the mole as the *Vindictive* rolled in the seaway.

The word for the assault had not yet been given when both leaders were killed, Colonel Elliott by a shell and Captain Halahan by machine-gun fire which swept the decks. The same shell that killed Colonel Elliott also did fearful execution in the forward Stokes mortar battery. The men were magnificent; every officer bears the same testimony.

The mere landing on the mole was a perilous business. It involved a passage across the crashing and splintering gangways, a drop over the parapet into the field of fire of the German machine guns which swept its length, and a further drop of some sixteen feet to the surface of the mole itself. Many were killed and more wounded as they crowded up the gangways, but nothing hindered the orderly and speedy landing by every gangway.

Lieutenant H. T. C. Walker had his arm shot away by shell on the upper deck, and lay in darkness while the storming parties trod him under. He was recognized and dragged aside by the commander. He raised his remaining arm in greetings. "Good luck to you," he called as the rest of the stormers hastened by. "Good luck."

The lower deck was a shambles as the commander made the rounds of the ship, yet those wounded and dying raised themselves to cheer as he made his tour. . . .

HEROIC WORK ON THE *IRIS*

The *Iris* had troubles of her own. Her first attempts to make fast to the mole ahead of the *Vindictive* failed, as her grapnels were not large enough to span the parapet. Two officers, Lieut. Commander Bradford and Lieutenant

Hawkins, climbed ashore and sat astride the parapet trying to make the grapnels fast till each was killed and fell down between the ship and the wall. Commander Valentine Gibbs had both legs shot away and died next morning. Lieutenant Spencer, though wounded, took command and refused to be relieved.

The *Iris* was obliged at last to change her position and fall in astern of the *Vindictive*, and suffered very heavily from fire. A single big shell plunged through the upper deck and burst below at a point where fifty-six marines were waiting for the order to go to the gangways. Forty-nine were killed. The remaining seven were wounded. Another shell in the ward-room, which was serving as a sick bay, killed four officers and twenty-six men. Her total casualties were eight officers and sixty-nine men killed and three officers and 103 men wounded.

Storming and demolition parties upon the mole met with no resistance from the Germans other than intense and unrelenting fire. One after another building burst into flame or split and crumbled as dynamite went off. A bombing party working up toward the mole extension in search of the enemy destroyed several machine-gun emplacements, but not a single prisoner rewarded them. It appears that upon the approach of the ships and with the opening of fire the enemy simply retired and contented themselves with bringing machine guns to the short end of the mole.

HOW THE CANAL WAS BLOCKED

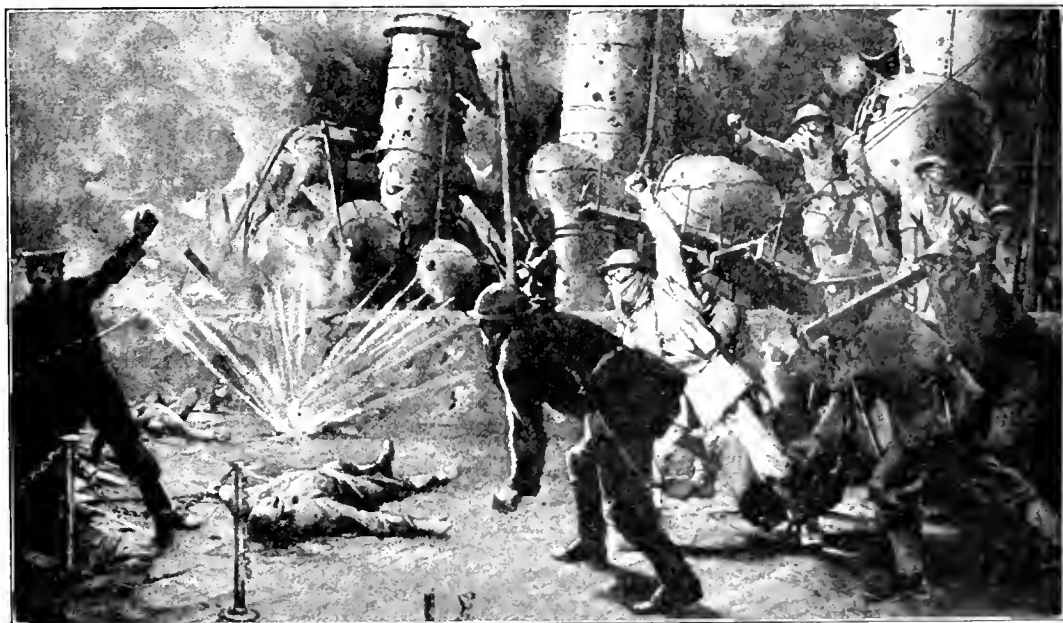
The *Thetis* came first, steaming into a tornado of shells from great batteries ashore. All her crew, save a remnant who remained to steam her in and sink her, already had been taken off her by a ubiquitous motor launch, but the remnant spared hands enough to keep her four guns going. It was hers to show the road to the *Intrepid* and the *Iphigenia*, which followed. She cleared a string of armed barges which defends the channel from the tip of the mole, but had the ill-fortune to foul one of her propellers upon a net defense which flanks it on the shore side.

The propeller gathered in the net, and it rendered her practically unmanageable. Shore batteries found her and pounded her unrelentingly. She bumped into the bank, edged off, and found herself in the channel again still some hundreds of yards from the mouth of the canal in practically a sinking condition. As she lay she signaled invaluable directions to others, and her commander, R. S. Sneyd, also accordingly blew charges and sank her. Motor

launches under Lieutenant H. Littleton raced alongside and took off her crew. Her losses were five killed and five wounded.

The *Intrepid*, smoking like a volcano and with all her guns blazing, followed. Her motor launch had failed to get alongside outside the harbor, and she had men enough for anything. Straight into the canal she steered, her smoke blowing back from her into the *Iphigenia's* eyes, so that the latter was blinded, and, going a little wild, rammed a dredger, with her barge moored beside it, which lay at the western arm of the canal. She was not clear, though, and entered the canal pushing the barge before her.

Lieutenant E. W. Bullyard Leake, commanding the *Iphigenia*, beached her according to arrangement on the eastern side, blew her up, saw her drop nicely across the canal, and left her with her engines still going, to hold her in position till she should have bedded well down on the bottom. According to the latest reports from air observation, two old ships, with their holds full of concrete, are lying across the canal in a V position, and it is probable that the work they set out to do has been accomplished and that the canal is effectively blocked. A motor launch, under Lieutenant P. T. Deane, had followed them in to bring away the crews and



From the *London Times History*.

The Landing Party Reaches the Upper Wall of the Zeebrugge Mole

It was then that a shell hit the steam connections of her whistle, and the escape of steam which followed drove off some of the smoke and let her see what she was doing.

TWO CRUISERS BLOWN UP

Lieutenant Stuart Bonham Carter, commanding the *Intrepid*, placed the nose of his ship neatly on the mud of the western bank, ordered his crew away, and blew up his ship by switches in the chart room. Four dull bumps were all that could be heard, and immediately afterward there arrived on deck the engineer, who had been in the engine room during the explosion, and reported that all was as it should be.

waited further up the canal toward the mouth against the western bank.

Lieutenant Bonham Carter, having sent away his boats, was reduced to a Carley float, an apparatus like an exaggerated lifebuoy with the floor of a grating. Upon contact with the water it ignited a calcium flare and he was adrift in the uncanny illumination with a German machine gun a few hundred yards away giving him its undivided attention. What saved him was possibly the fact that the defunct *Intrepid* still was emitting huge clouds of smoke which it had been worth nobody's while to turn. He managed to catch a rope, as the motor launch started, and was towed for awhile till he was observed and taken on board.

STORY OF CAPTAIN CARPENTER, HERO OF ZEEBRUGGE

COMMANDER CARPENTER, promoted for his gallant share in this exploit to the rank of captain, issued a statement to the *Associated Press* summarizing the work of his ship, the *Vindictive*. He said:



Captain Carpenter of the *Vindictive*

His job was to get alongside the Mole, land his marines and stay there, drawing the fire of the batteries and diverting attention while the block-ships got into the canal and sunk themselves, then to clear out as soon as possible.

"Our chief purpose in the expedition was to distract the attention of the battery while the block-ships ran in, especially the battery of eleven-inch guns, which occupied a commanding position at the tip of the mole. Our ship was

elaborately prepared for the business of landing soldiers on the mole, which is of stone, forty feet high and fifteen feet above the *Vindictive's* top deck at the state of the tide when the attack took place.

"We had a special superstructure over the upper deck and three long gangways, or 'brows,' which were designed to take the men up to the level of the mole as soon as we got alongside. Exactly according to plan, we ran alongside the mole, approaching it on the port side, where we were equipped with specially built buffers of wood two feet wide. As there was nothing for us to tie up to we merely dropped anchor there, while the *Daffodil* kept us against the mole, with her nose against the opposite side of our ship.

MARINES SWARM UP ON THE MOLE

"In the fairly heavy sea two of our three gangways were smashed, but the third held and 500 men swarmed up this on to the mole. This gangway was two feet wide and thirty feet long.

"The men who went up included 300 marines and 150 storming seamen from the *Vindictive* and fifty or so from the *Daffodil*. They carried hand-grenades and Lewis guns. No German succeeded in approaching the gangway, but a hard hand-to-hand fight took place about 200 yards up the mole toward the shore.

"The *Vindictive's* bow was pointed toward the shore, so the bridge got the full effect of enemy fire from the shore batteries. One shell exploded against the pilot-house, killing nearly all its ten occupants. Another burst in the fighting top, killing a lieutenant and eight men who were doing excellent work with two pompoms and four machine guns.

"The battery of eleven-inch guns at the end of the mole was only 300 yards away and it kept trying to reach us. The shore batteries also were diligent. Only a few German shells hit our hull, because it was well protected by the wall of the mole, but the upper structure, masts, stacks, and ventilators, showed above the wall and were riddled. A considerable proportion of our casualties were caused by splinters from these upper works.

"Meanwhile the *Daffodil* continued to push us against the wall. If the *Daffodil* had failed to do this none of the members of the landing party would have been able to return to the ship.

"Twenty-five minutes after the *Vindictive* had reached the wall the first block-ship passed in and headed for the canal. Two others followed in leisurely fashion while we kept up the fight

on the mole. One of the block-ships stranded outside of the canal, but the two others got two or three hundred yards inside, where they were successfully sunk across the entrance.

SECRET PRACTICE BEFORE THE ATTACK

"One difficulty we had in preparing this expedition was that we could not have open prac-

"Fifteen minutes after the *Vindictive* arrived alongside the mole our submarine exploded under the viaduct connecting the mole with the mainland. The Germans had sent a considerable force to this viaduct as soon as the submarine arrived and these men were gathered on the viaduct attacking our submersible with machine guns.

"When the explosion occurred the viaduct



© Underwood and Underwood.

The Officers of the *Vindictive*

From left to right, are Sergeant Payne, Sergeant Glegg, Commander Osborne, Captain Carpenter, Staff-Sergeant McCutcheon and Senior Gunner Sobby.

tice of what we contemplated doing for fear the enemy might get information of the plan. Our preparation, therefore, was limited to a certain amount of intensive training at night fighting and bombing, while officers were carefully drilled in dealing with exigencies likely to occur.

"All the men were tuned up to a high pitch, and it was with very anxious hearts that we waited for a suitable time to strike, knowing that every day we waited there was a greater chance of our secret leaking out.

and Germans were blown up together. The crew of the submarine, consisting of six men, escaped on board a dingy to a motor-launch.

"Early in the fighting a German shell knocked out our howitzer which had been getting in some good shots on a big German seaplane station on the mole half a mile away. This is the largest seaplane station in Belgium. Unfortunately, our other guns could not be brought to bear effectively upon it. The shell which disabled the howitzer killed all the members of the gun-crew. Many men also were killed

by a German shell which hit the mole close to our ship and scattered fragments of steel and stone among the marines assembling on the deck around the gangway.

"The German fire was very hot all the time we lay alongside the mole. At times the German guns reached as high as forty shots per minute. During the hottest part of the fighting I left my station in the flame-house and went all around the ship to see how things were going. The spirit of the men was excellent. All they asked was—'Are we winning?'"

"Half an hour after the block-ships went in we received the signal to withdraw. The *Vindicative's* siren was blown and the men returned from all parts of the mole and thronged down the gangway. We put off after having laid alongside just about an hour."

HEAVY BRITISH LOSSES

With all the tremendous odds against the British in the Zeebrugge exploit it is not surprising to learn that it cost heavily in men. The whole affair at the mole lasted only an hour, but in that time the casualties mounted to 588 men: Officers, 16 killed and three mortally wounded, two missing and 29 wounded; men, 144 killed, 25 mortally wounded, 25 missing, and 355 wounded.

The Germans were not in the habit of crediting their enemies, especially the British, with anything in the way of courage, skill, or success. Officially the German government made light of the attack on Zeebrugge, and the officials went to the trouble of making and publishing "doctored" photographs of the channel to prove to a gullible public that the block-ships were not inconveniencing the passage of vessels at all. At the same time, the commanding officer at Zeebrugge was removed with such suddenness as to suggest that everything was not quite so rosy as specified. And the *Frankfurter Zeitung* came out with the surprising admission that "it would be foolish to deny that the British fleet scored a great success through a fantastically audacious stroke in penetrating into one of the most important strongholds over which the German flag floats."

Certainly there are few parallels in naval history for this story. Cushing's sinking of the *Albatross* in our Civil War and Hobson's exploit with the *Merrimac* in the war with Spain belong to this class of achievements, but these were on a tiny scale by com-

parison. The only other instance that seems comparable is the famous entry of Drake into the harbor of Cadiz with the subsequent burning of the whole Spanish fleet.

MOTOR LAUNCHES TO THE RESCUE

One of the finest incidents in an adventure crowded with brave deeds was the rescue of the crews of the sunken ships. Two American-built motor launches entered the harbor at Zeebrugge lashed with projectiles from all sides, and transferred the crews of the two block ships *Intrepid* and *Iphigenia* that had planted themselves athwart the mouth of the canal. The crew of the *Thetis*, which had grounded just outside, had already been taken off by other motor boats. The idea had been to transfer most of the men to a launch just outside the harbor, leaving just enough to carry the ships to the appointed place. This had been accomplished in the case of the other two, but the *Iphigenia's* launch had been unable to get alongside before the entry into the harbor, so that there was an unexpected number of men to be taken care of by the motor boats that came alongside the vessels after they had been sunk.

Despite everything all were taken off in five minutes; one of the boats had 99 men on board and was literally loaded to the water's edge. By some miracle these boats went back unscathed and delivered their men to the waiting destroyers.

THE SUBMARINE BLOWN UP

One feature of the night's work not to be forgotten was the part played by the submarine. One of her crew tells this story in a dispatch to the *New York Times*:

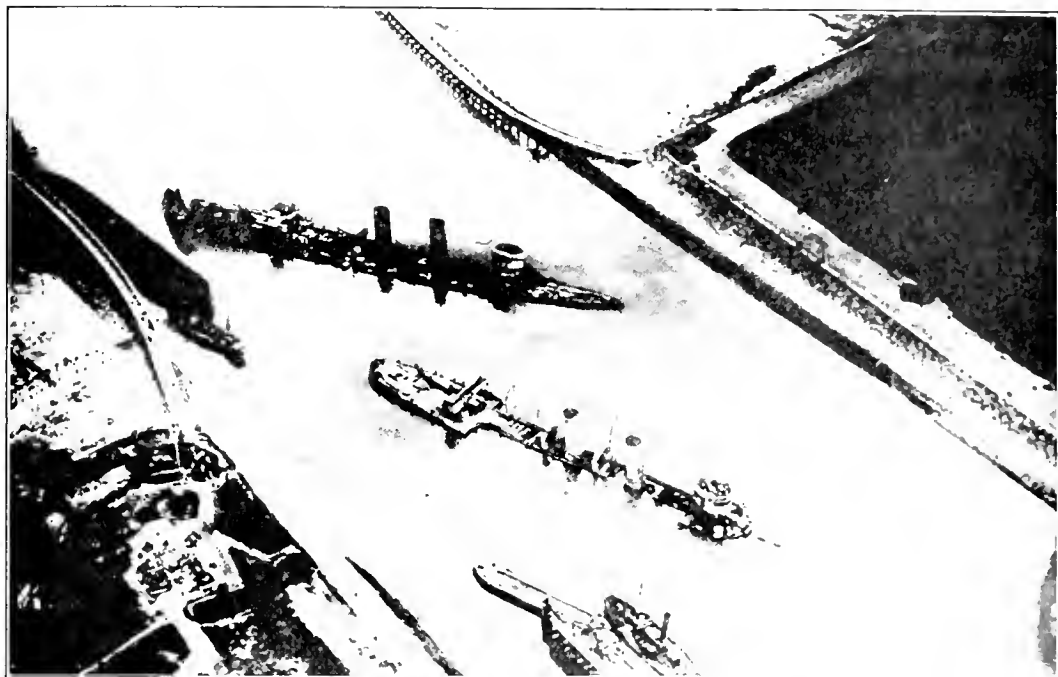
"We had a surface trip right across escorted by other forces, and by the help of smoke clouds we got right in and were able to drive her almost right up, before we were discovered, to the wall of the mole. It was tricky work and there was not much time to think about it, as we had to work exactly to a time-table of seconds, and if anything had gone wrong—well, good-by."

"But we got her up there all right. I can't tell you what the submarine was filled up with, but it was something much worse than T. N. T. Everything had to be fixed in a few seconds, and just as we got up the Germans managed to spot us, putting a search-light full on us. Then

we had to get away through a hot time. We only had a little dingey, which we had to get out while machine guns and rifles were firing hard on us from everywhere, but we tumbled in and had just got off a little way, when the submarine blew up. It did the job all right, I can tell you. It almost capsized us, but we hung on, although two or three were wounded, and soon a motor-launch picked us up, and after a bit a destroyer took us in charge.

AS TOLD BY THE THIRD IN COMMAND

FOR a complete story of the Zeebrugge exploit nothing could be better as a personal document than the narrative by one of the *Vindictive's* party published in the *Cornhill Magazine*. The writer is Lieutenant Commander E. Hilton Young, Second Lieu-



Courtesy of Scientific American.

British Ships Sunk in the Zeebrugge Canal

A photograph taken at a low altitude in 1918 by a German airman showing how two of the old British cruisers obtained their objective during the Zeebrugge raid and completely blocked the fairway

"It was a great time, and I wouldn't have missed it. . . . I shall not forget what I saw and heard. The gun-fire was hellish on each side. I got a bullet in the thigh, which came right through the boat first, fortunately, before it hit me."

The story of this exploit will live as long as the thrill of brave deeds holds its enchantment. These daredevils of the *Vindictive* literally offered their lives against heavy odds that they would not survive. In the following chapter are given the vivid impressions of a man who was there.

tenant of the *Vindictive* at the time of the assault:

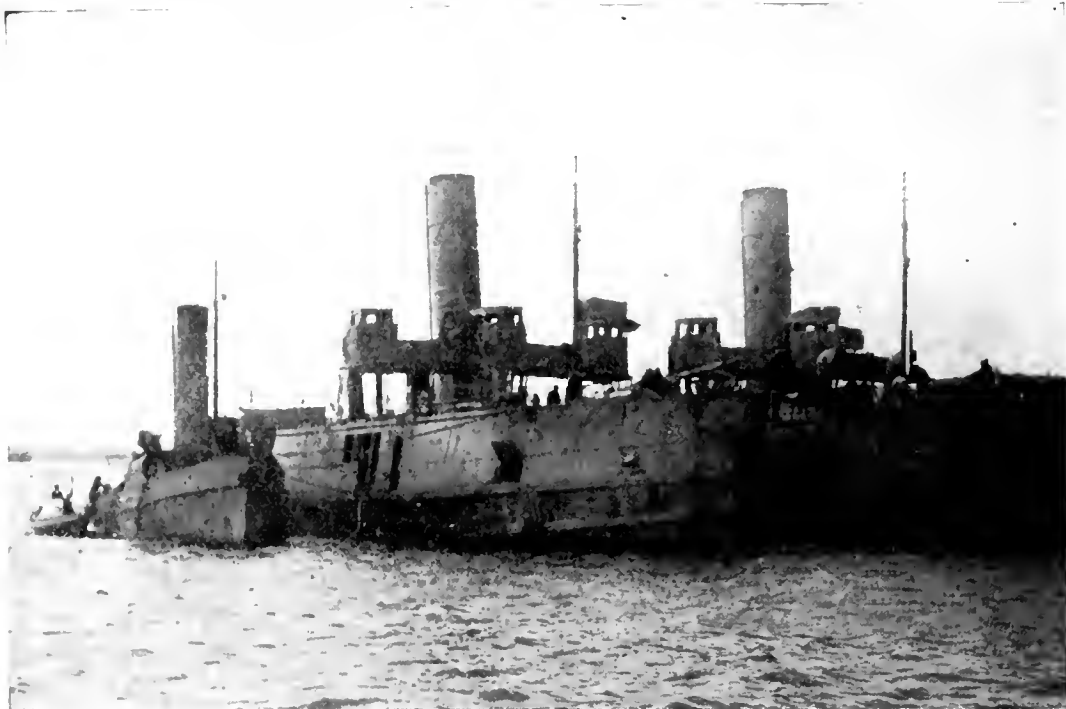
"As time passes, and the press of small things remembered from *Vindictive* days grows less, certain scenes and pictures are left standing out in relief. Soon they too will begin to fade, and to be obscured by impressions of the adventure received at second hand, from people who write about it, or people who tell me about it. I will try and set down these pictures and impressions of my own before they go.

"The first memory to set down is about the collection of the volunteers. It was in Flanders, and the scene was our camp, which was a row

of railway trucks, set solitarily in the noze and shining pools of a Flemish pasture. A row of sad, thin lindens, splintered and broken by shells and bombs, stood black against a sunset of pale wet silver. The khaki-clad sailormen were drawn up in a row along the duck-boards that served us for a causeway through the mud, while from the steps of a truck I read them a curt notice: 'Volunteers are wanted for an undertaking of real danger.' I told them to go away

since there were sailors on the spot it would be nice to have some of them for the aquatic part of the proceedings.

"Where the dauntless seven led, others were eager to follow, and the number needed might have been obtained several times over. For all I could see, most of the men were quite indifferent whether after their long service they went home to their families or engaged in the new service of 'real danger.' But at the back



The Ferry Boats *Iris* and *Daffodil* On Their Return

They made the heroic trip to Zeebrugge with the *Vindictive* and took part in the great adventure at the Mole.

and think it over, hoping for their sakes that they would not volunteer. All of them had been two years on this front, under continuous fire and suffering heavy casualties. They had just been released, and were to go home for leave before reemployment. They had earned a rest, I thought; and they must have thought so too; but half of them gave in their names during the evening. The first to come was our desperate gang, a club of seven fire-eaters, who had joined together to make a corner in all the 'fierce' jobs. They came together first in the trenches by the Yser, as the crew of a boat that was to row over a forlorn hope of a raid, to land in the German trenches. The Army had thought that

of their minds, no doubt, there was something more than indifference.

"Of the men who had volunteered from our gun's crew fifteen were chosen, and sailed in the *Vindictive*. Several were wounded, but all survived. I found two of the wounded ones afterwards selling catalogues at the show of naval photographs in Piccadilly. They could hardly believe their luck, they said, at having had such a treat.

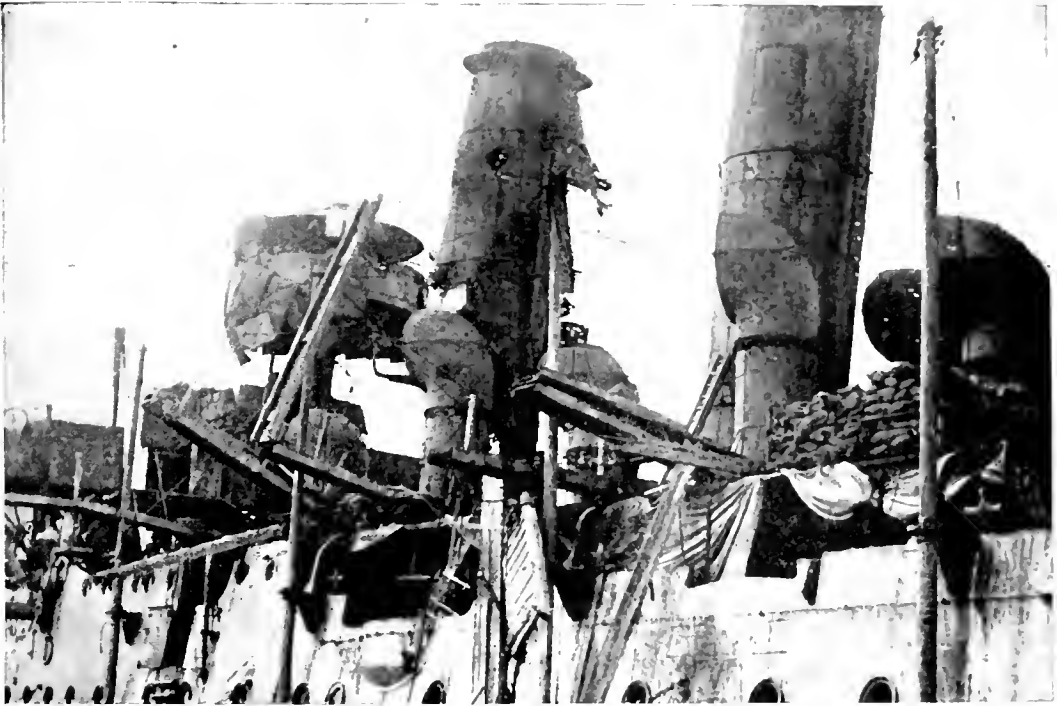
THE *VINDICTIVE'S* FALSE DECK

"The next picture in my memory is of my first sight of the *Vindictive* in the gray business-

like scenery of the docks at —. I tramped across the rails and among the sheds, to the edge of the square basin of dirty water, where lay that aged giant, H.M.S. —. In command of her was Captain Davidson, the nurse of the expedition. Until then I knew nothing of the object or plan of the operations. I had hazarded a guess only that an attempt was to be made to block Zeebrugge. The captain took me out on to her stern-walk and showed me an aged cruiser lying half hidden on the side of her far

The false deck was about the height of Zeebrugge Mole. We are to land parties on the Mole, I thought, and they will fight their way to the lock-gates and blow them up. It was not till some time later that I noticed the block-ships lying in corners of the dockyard basin, and so came to understand the true purpose of the operation, and the part the *Vindictive* was to play in it.

"But that we were in for a landing in the face of the enemy was clear enough, and



View of the *Vindictive* After Her Return Showing Improved Brows Used For Landing at Zeebrugge

This gallant ship found her last berth in the very jaws of Ostend harbor. The harbor was not completely blocked, but it was made impractical for any but small craft.

from the jetty. The cruiser swarmed with dockyard hands and rang with riveters' hammers. 'There is your ship,' said he; 'the look of her must tell you something of what she is for.' Surely it did. There were machine guns and short-range howitzers; there was an unnaturally large top, with a short-range armament; there was a high platform or false deck of wood built all along one side of the ship, and wooden slopes to give ready access to it from the other side for running men. Here was a ship equipped for a landing, and for a landing in the face of the enemy. If to land, then where?

troubled by anxious thoughts about the desperate nature of the undertaking, so suddenly discovered, I went to the wardroom to find, on the company there assembled, an atmosphere inimical to anxiety or trouble. There were many there whose names will not be forgotten; to have known them, even for a few short weeks, was as good a gift as life could give. There were strong Harrison, a quiet tower of confidence and security, dark, electric Chamberlain, and dark smiling Bradford, whose manner had ever the graciousness and gentleness with which the true warrior spirit is wont to sur-

round itself, to save it from hurting other spirits less finely tempered than itself. These great fighting men were leaders of the landing-party of seamen, and all three fell, in the *Indictive* or on the Mole. There were many others in that wardroom who were to fall gloriously, but these three, of those who died, took a leading part in the work beforehand, and live most vividly in my memory.

"We worked together for a fortnight in the docks, training crews and preparing gear; and then, as the time appointed by the moon drew near, the *Indictive* and the block-ships moved out of the docks to a lonely and remote anchorage, where they would be free from observation. The land was a gray line upon the horizon; there was nothing to see but a steel beacon standing in a melancholy attitude, with its thin legs in the waves that were breaking white over the sands. All the fortnight that we stayed there it rained hard and blew hard, and it was very cold.

"The ship was then receiving the finishing touches in equipment, victual, and ammunition. The authorities seemed to take a warm interest in us and to send us some of everything they had. We became a perfect museum of 'frightfulness,' full to the brim with every sort of solid and liquid that could be offensive to the Germans. Even after we were as full as we could hold stuff kept on coming—cases, barrels, bales, boxes, cylinders, and sacks. Watch became half a nightmare, half a joke. All day long tugs and lighters kept on arriving with fresh consignments of gear, some of it necessary, some of it 'just a few spares,' duplicates of what we already had, and for which there was no earthly room; some of it the happy thought of someone who 'thought it might come in useful.' It was as hard work to keep the unnecessary stuff off the ship as to get the necessary stuff on. While one was busy on the fore-castle a lighter would ship alongside aft and deposit its unwanted load on the quarter deck; and then the tired hands had to hoist it all back again. There were twelve vast and superfluous casks of oil that showed an ingenuity in stealing on board unobserved that was positively fiendish. Turn your back for a minute and you found them slinking over the side, or you broke your shins on them, already hidden like stowaways in some secret place below. They must have been casks of exceptionally keen patriotic feelings, burning with zeal for the service. We could not but admire their spirit, but they were not wanted; so after they had been repeatedly expelled in vain they

were sent on shore to be put under arrest until the expedition had started.

ATTACK THREE TIMES PUT OFF

"It is known, I think, that there were three abortive attempts at the attack before it was actually carried out. Once the ships were all manned and ready but never started. Once we started, and the weather sent us back within the hour. Once we got right over to within a few miles of Zeebrugge when we had to turn and go home because of a change in the wind. The scene when we turned on this last occasion was a strange and memorable one. I came on to the bridge at 10 P.M. The expedition was then at the very gates of Zeebrugge, the *Indictive* and the block ships, the transports and destroyers, and countless motor boats for the smoke screen, all steaming in company. A few minutes more and we should be committed to the attack. We were all screwed up to the sticking point; and as I came on to the bridge I was saying to myself, Now we are in for it!

"F—, whom I was relieving, turned round to me and said 'It's off!' The wind had failed us at the last moment; there were now light airs blowing off shore, and the Admiral had just signaled to us to go home. Whether I was more glad or sorry I could not possibly say. My mind was a jumble, of pleasure at the relief from sheer funk, and of disgust at the disappointment of our plans. It is good to be relieved suddenly from the prospect that the next half-hour will be an unpleasant one; but it is bad when one has braced one's self for a crisis to have suddenly to relax again with the crisis unfulfilled. Anyone knows that who has braced himself to call upon his dentist and found him not at home.

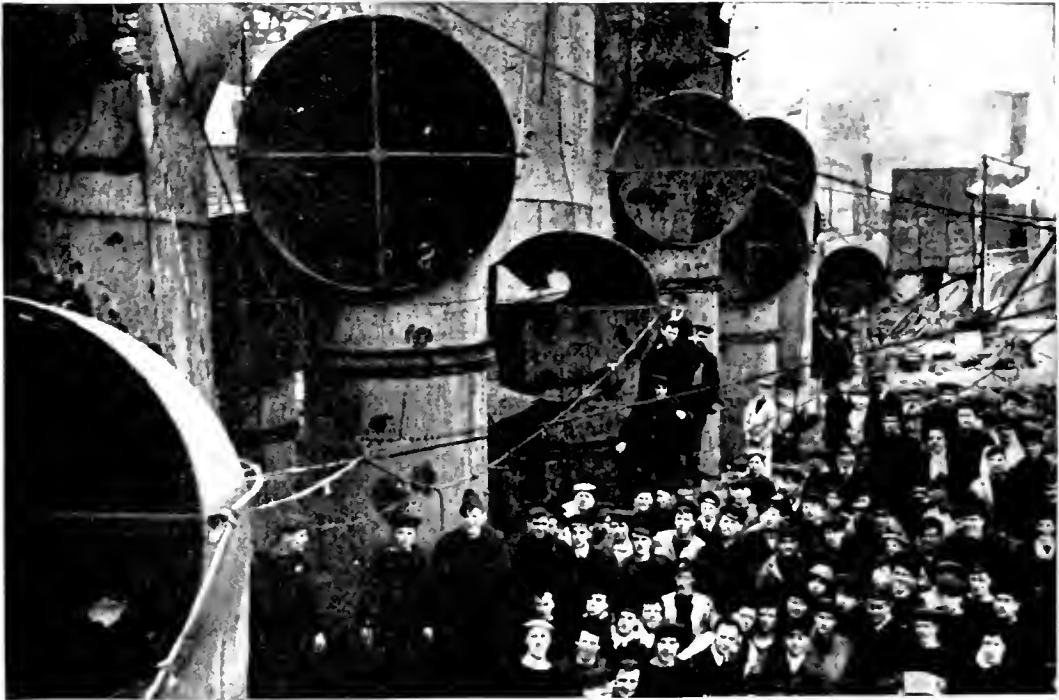
FINALLY ALL IS READY

"There was nothing more worth remembering, until the night; the long wait at anchor in the same bleak roadstead, far from the land, is best forgotten. The picture becomes sharp again at eleven o'clock at night on April 22. At that hour we had arrived at the point from which we turned back the time before, and the wind was favorable. A few minutes later we had taken the critical step that committed us to the attack, wind or no wind, and we went to action stations. The night was overcast; but there was some star-shine, and also, I think, a low young moon behind the clouds. Altogether there was a faint glimmer of light

on the sea, and large objects could be seen dimly some five hundred yards away.

"My first station was in the port battery. There were two six-inch guns there, one forward, one aft, underneath the wooden platform or false deck where the leading landing parties were now mustered. The after gun was on the open deck; the for'ard gun was enclosed by the shelter deck (below the bridge) above, a store-room behind, and a bulkhead, dividing battery deck from fo'c'sle, in front. It stood thus in a

with men, mostly of the marines' landing parties; and presently a lot of them came crowding into our bay through the door from the fo'c'sle. They filled the cramped space to overflowing; one could not move in the dark without treading on somebody; the decks were so full that there was nowhere else for them to go, and they had to stay. They crowded dangerously close round the gun; there was hardly room to load, and if we had had to fire in a hurry they were in danger of injury from the recoil. So



The Crew of the *Indivictive* On Her Return from Zeebrugge

These picked men went out to what they thought was certain death on the night of the Zeebrugge raid. Captain Carpenter says they were keen to get into the action, but were always calm and controlled, heroes to a man.

dark bay of casemate, approached from the battery deck by a narrow entry a few yards long.

"I took my station in this bay by a voice pipe behind the gun. In there it was impossible to see more than some difference in the blackness of the shadows. We felt over the gear that was needed for the gun, and then the crew settled down round it, to wait. Some illicit cigarette ends began to glow in the corners; but it seemed an occasion for a little relaxation in the rigor of the rules.

"Looking out down the battery decks one could see or rather feel that they were crowded

all the time we had to be telling them to stand clear, and often to be feeling about in the dark to make sure that there was nobody in the way. That was the chief external occupation and anxiety during the approach.

A TENSE HALF-HOUR BEFORE THE ATTACK

"For half an hour we waited and smoked in the dark, and there was plenty of time for a short look forward and a long look back. There was a reward now for our several failures in a keen sense of satisfaction and relief, born

of the disappointments, that at last we were sure of an attempt of some sort, if not of a successful attempt. After the repeated barhos of the failures, and the dismal and nervous waiting, one could almost forget, in satisfaction that something was going to happen after all, the circumstance that the something would probably involve one's own extinction. What else were men thinking about during that half-hour? What do men think about in the presence of death? Some think much; some think not at all. Each must find the best thought that he can, according to his capacity; for the mind, in that pass in which none is so strong that he can despise help, turns for help to whatever it loves best; not in longing or regret, but because in love there is confidence and security. If a man has loved common things best, the thought of common things will be all that he has to help him in the presence of death. If he has loved the face of nature and the good works of man, and above all good friends, then, in this pass, the beauty of the good things that he has loved comes back to him, to be his rest and strength, and the memory of his friends surrounds and fortifies him.

PROFOUND SILENCE ALL ROUND

"In times of waiting under great stress the thoughts turn not forward, but back. Up till the very last moment, that night, it was impossible to realize with any vivid conviction that the great adventure was actually just going to happen. The ship was stealing along in such profound silence, all round the sea was so completely tranquil, the darkness so limitless and empty, it seemed as if we might go on quietly so forever. So the minutes passed, until now it was a quarter to twelve. Swiftly then came a shock of conviction—we must be within a mile or two of the Mole, and holding our course; in ten minutes we shall be into it. To ear-strained nerves it was a good thing to run over again with the gun's crews what they were to expect and what they were to do. In a few minutes the ship would begin to turn towards the Mole under port helm. The Mole itself would probably be invisible in the dark. What we should see would probably be the flashes of the German guns in the battery at the end of the Mole, appearing on the port bow as the ship turned to starboard. Those flashes were to be our target. If we could see the lighthouse on the end of the Mole we were to fire at that too. We were not to open fire before the top.

"At this moment, from far away behind us miles out to sea, there came a dull thud! thud!

It was the great monitors, waking Zeebrugge with enormous shells. The attack had begun. It was tremendously hearty and encouraging to hear our own big guns opening the dance, and to think that we were getting all the help in our adventure that could be given us. Still a minute or two ticked away, and nothing happened; still there might have been nothing but open sea ahead of us; but in fact the guns of Zeebrugge were less than a mile away. It was incredible that nothing should be happening. Had they no patrols or searchlights at all? Fortune was favoring us beyond our dreams. This was the critical time; every second almost that passed now, without our being observed, much increased our chance of getting alongside the Mole. I stepped up to the projecting embrasure of the gun to have a look round. The foggy air was streaky with some thicker fumes than fog, and behind me I could just descry in the darkness a line of faint gray plumes; it was the motor craft pouring out smoke to screen us.

STAR SHELLS LIGHT UP THE SKY

"Then far, far away on our left the brilliant light of a German star shell appeared suddenly in the sky; then another nearer at hand; and then one right overhead. To our seeming, it lit the whole ship and the surrounding sea with an illumination so brilliant that we must be visible for a hundred miles. One could see each individual face in the crowd on deck, staring angrily up at the star, in hard black shadows and white lights. And still the Germans did not open fire. Looking out from the embrasure one could guess the reason why. The sky was now thick with a perfect rain of shell stars; but, clearly as they showed us to ourselves, it did not follow that they showed us to the Germans. As each star fell into the smoke screen that now covered the sea, unless it was within a very few hundred yards of us it was eclipsed as a star and became a large vague nebula. Although then there was plenty of light about, a few hundred yards from the ship everything was blotted out in wreaths, eddies, and whirls of glowing vapor. The German gunners, I imagine, were peering into the vapor, unable to perceive any definite object in the shifting, dazzling glow, and wondering what in the name of goodness was going to come out of it.

GERMAN GUNS BEGIN TO FIRE

"So we steamed on, until we were some six hundred yards from the Mole and had just begun to turn to starboard to run alongside it,

when the storm broke. A searchlight shone out from the end of the Mole, swung to left and right, and settled on the ship. At once the guns of the Mole battery opened fire. From our dark hole we could see their quick flashes on our port bow. There was a faint popping in the sea all round. More accustomed to the crash which a shell makes when it bursts ashore, I did not realize at the time that this was the

who has been in a sea fight, the smell of blood and burning.

"Glancing out through the embrasure, I saw at this moment a fine sight. The wind during the last few minutes had dropped, and the smoke screen was no longer drifting ahead of us. Quick as thought, one of the motor craft grasped the situation. Up on our starboard she dashed, leaping, almost flying across the waves,



Underwater and Underwater.

A Bird's-Eye View of Ostend Harbor

This photograph was taken by a British airman June 5, 1918, before the German evacuation. Note the German destroyers ranged in a line alongside the quay.

noise of shells that had missed us, bursting in the sea. And then they began to hit. It was during the next few minutes that we had by far the greater part of our heavy casualties; but at the time my attention was so wholly fixed on listening impatiently for the first shot from the top, in order that the six-inch might begin too, that I hardly noticed what was going on. It was afterwards that I remembered the eruptions of sparks where the shells struck, the crash of splintering steel, the cries, and that smell which must haunt the memory of anyone

with furious haste, pouring out smoke as she came. Across our bows, right between us and the batteries, she swung, under the very muzzles of the guns, and vanished into her own smoke, unharmed. It was a gallant act, and good to see.

"SOMETHING WENT PONK! JUST BEHIND ME"

"It was the last thing that I saw, for a bit. Something went ponk! just behind me. A Titan blacksmith whirled a heavy sledge-hammer

and hit me with all his might on the right arm. The blow sent me spinning down the narrow entry, to fall in the middle of a group of marines crouching on the battery deck.

"Why, what ever's the matter with you?" said one, in a surprised voice, and stirred me tentatively with his foot.

"The universe became a black star which had its radiant point just below my right shoulder.

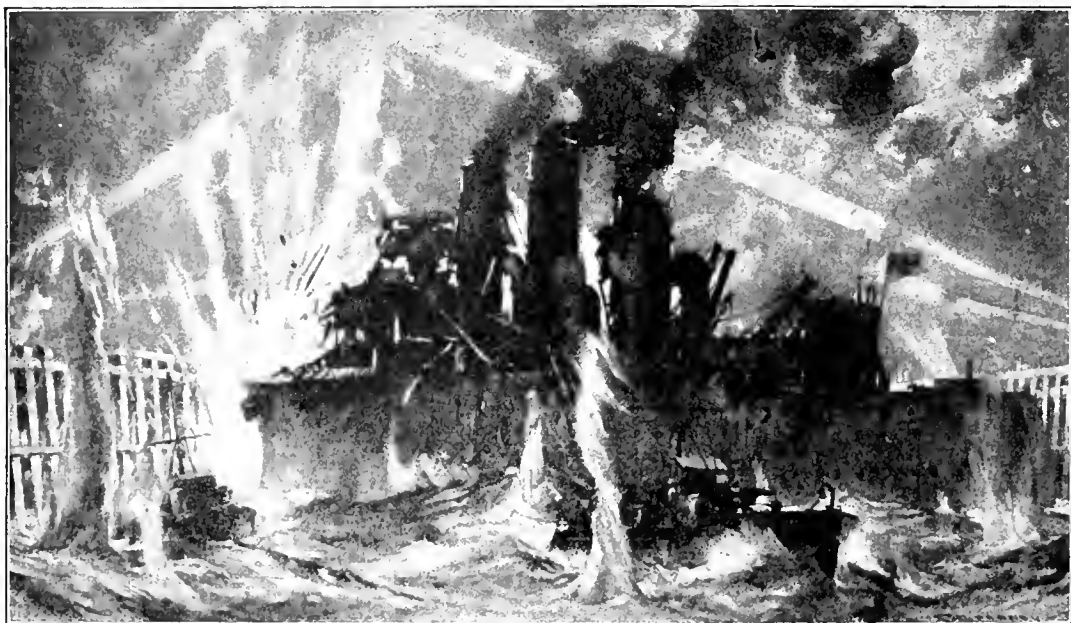
"When things became reasonable again, the *Vindictive* was alongside the Mole, sheltered for the time from any heavy gunfire. The wet, jade-green curve of the wall was dimly visible,

hard as she could. F—— and some of the crew were busy there making fast a wire hawser to help her to keep her difficult position. Rifle bullets from the Mole made little splashes of fire on the deck about them as they worked.

"Coming round to the starboard battery I stumbled over somebody at the foot of one of the wooden ramps leading to the landing platform. As well as I could see in the dark there was a platoon of marines still waiting there, crouched on the deck. A marine officer looked down from the landing platform.

"Aren't these folks going over?" I asked.

"Those are all gone," he said.



The *Vindictive* Successfully Sunk at Ostend Harbor, May 19, 1918

sweeping up out of the dark and back into it again. The last of the landing parties was going over the brows, and there was a crackling and flashing of rifle and machine gun fire up and down the Mole. From our top came intermittent bursts of the deafening uproar of small automatic guns, the most ear-splitting noise in the world. Every now and then there was a loud roar and a bright flash aft, on the quarter-deck; I thought for a time that big shells were hitting us there, but it was a pocket giant of our own, which its crew kept firing away steadily all the time, in spite of every distraction. Looking out on to the fo'c'sle one could see the *Daffodil* nosing into our starboard bow and kicking the water out behind her screw as

"I was having a good sit-down for a minute on a mushroom head in the battery, when shells began to strike our upper works, the funnels and cowls, which stuck up above the sheltering Mole. German destroyers had seen them from inside the harbor and were shooting at them from a few hundred yards' distance. When the shells struck a cowl or a funnel a spray of splinters from the thin steel structure dashed down into the battery, causing many casualties there.

HEROES OF THE FIGHTING TOP

"The top also stuck up above the Mole, just ahead of the funnels; and it was, no doubt, the uproar of its automatic guns that had attracted

the attention of the destroyers. But the fire thus directed on them at point-blank range had no effect on Rigby and his stout crew of six marine gunners in the top. While the destroyers' shells were striking our upper works close beside them one heard their guns still bursting out at regular intervals into mad barking. Then there was a crash there, and a shower of sparks. Silence followed it. They are all gone—I said to myself. But in a minute or two a single gun broke out again, and barked, and barked. Then there was another crash, and the silence of the top became unbroken.

"Words cannot tell with what a glow of pride and exultation one heard that last gun speak. It seemed impossible that there should be anyone left alive in the top. After the first shell struck it, and when the gun spoke again, it seemed as if the very dead could not be driven from their duty. The *Gazette* has told the story of what actually happened up there; how the first shell killed all the crew but the sergeant, who was severely wounded; and how he managed to get a gun back into action before the second shell struck, wounding him again and putting him out of action. Would that Rigby had lived to know how faithfully his trust was discharged by the last member of the crew that he had trained!

HOT WORK FOR THE IRIS

"The *Iris* now appeared out of the dark and came alongside us at the starboard waist. Owing to the heavy swell she had found it impossible to land her men on the Mole ahead of us as she had been intended to do. The scaling ladders could not be made fast. The gallant Bradford and Hawkins, the leaders of her landing parties of seamen, had climbed on to the Mole to try to secure the ladders and had both been killed in the attempt. Bradford climbed up a davit and jumped ashore. He was the first man on the Mole. Hawkins, his second in command, climbed up by a line. The Mole at that point was swept by machine-gun fire and rifle fire from snipers, and incessantly illuminated by star shells and rockets. They must have well known how desperate was their undertaking; there could not, I think, have been a braver act.

"Now, the *Iris* was going to try to land her parties over the *Indictive*, which, thanks to the continual thrust of the *Daffodil* against her bow, was keeping her position, fairly comfortably, alongside. But beside the *Indictive* the *Iris* still danced in the swell like a cork, and

it was some time before we could get a hawser on board from her, or secure it when we had got it. At last it was done, and the men in the *Iris*, watching their opportunity, began to jump into the *Indictive*. But meanwhile time had fled. We seemed to have been alongside a few minutes only; we had been there an hour, and it was almost time to go. The order came that no more men were to land, that the *Iris* and the *Daffodil* were to blow their sirens to recall the landing parties (our own had been shot away), and that then *Iris* was to go.

"The sirens bellowed; we cast off the *Iris's* hawser, and she backed away from our side, turned, and steamed out to sea, her course taking her right across the front of the Mole batteries at four or five hundred yards' distance. I watched her with a sinking heart, knowing how we had suffered on the same course coming in. She had not gone five hundred yards from us when the batteries opened an intense fire. It was a terrible thing to watch. At that short range the light fabric of the little ship was hulled through and through, flames and smoke spurting from her far side as the shells struck. She disappeared from sight in the darkness and a thick cloud of smoke. I thought at the time that she had probably sunk. In fact, as is well known, she survived, but suffered, during those few moments, terribly heavy casualties.

THE LANDING PARTIES RUSH BACK

"Recalled by the bellowing sirens, the landing parties poured back on board of us over the two remaining bows and streamed down below. It was now our turn to go. The *Daffodil* gave a snort, expressive of relief at being released from her long hard shove and of satisfaction at its complete success, and backed away. A pre-arranged trick of seamanship was performed, and our bows began to swing out from the Mole. In a minute we were clear, and our propellers were throbbing.

"My station for the withdrawal was again at the port six-inch guns. When the guns were no longer masked by the Mole we were to be ready to engage the Mole batteries, and I established myself once more by my voice pipe at the forward gun. Mr. C——, our gunner (now lieutenant), by shoving and hustling in the darkness, managed to get everything ready at the gun and to collect the emergency hands needed to replace casualties in the crew; so I had plenty of time to think things over. The first thought was, 'What luck we have had to get so far! We are actually leaving the Mole; a bit more

luck, and really and truly we may pull through.' Then I thought, 'What has happened on the Mole? What has happened to the block ships? I wish I knew!' And then I remembered what I had seen when the *Iris* passed the batteries, and thought, 'In two minutes that will be happening to us.' My thoughts traveled no farther, and I waited for what was coming.

STEALING BACK TO SEA AGAIN

"We stole on in deep silence. The din of firing had wholly ceased; all but the guns'

time began! I wish we could hurry up, I thought, and get it over, one way or another! And then I noticed that the popping round about had ceased. What ever can be the matter with them? I wondered; and then I realized with a flash that while I had been waiting and wondering a good ten minutes had passed since we had left the Mole, and that we must be past the front of the batteries, and leaving them fast behind.

"I could hardly trust myself to believe it. Had we perhaps been making a *détour* inshore, and were the batteries yet to pass? The gunner



© Western Newspaper Union.

"Well Done," *Vindictive*

Official photograph of the British cruiser which helped to bottle up the submarine bases at Zeebrugge and Ostend.

crews were below, and the decks were empty; there was nothing to hear now but the wash of the waves alongside. The whole ship seemed to be waiting, guns ready and attention strained, for the crash of a shell. But the minutes were passing; when was it going to begin?

"Thick black fumes were eddying about the decks from our smoke apparatus. Once again, as on the approach, there came a faint popping from the sea. Each moment we expected the bang and the flame. But the moments passed, and still the silence of the ship's progress was unbroken. The moments passed, and astonishment crept into my mind. How much longer it was taking than I expected, before the bad

was standing by the embrasure, and could see out.

"'What are we doing?' I called to him.

"'We're well away,' he said, 'and here come our destroyers.'

"So by the biggest wonder of that night of wonders we repassed the batteries, not only un-sunk, but unhit. Confused by our smoke screen, and flurried, no doubt, by what had been happening on the Mole, the Germans dropped every shot that they fired behind us, in a furious and perfectly harmless bombardment of our wake.

"We had pulled through; but we still had a race against time before us, to get out of range of the big guns ashore before we were

revealed to them by the dawn that was about to break. With flames pouring from her battered funnels, and burdened with triumph, death, and pain, the *Vindictive* sped away from Zeebrugge into the North Sea."

TWO ATTACKS AT OSTEND

As has been noted earlier in the Zeebrugge story, the attack on Ostend planned for the same night failed on account of the treacherous wind. The small vessels detailed for the purpose ran in, started their smoke screen and lighted the two flares that were to mark the entrance for the guidance of the two cruisers that were to block the channel. But the unlucky shift of the wind drove back the smoke and enabled the Germans to put out the flares by gunfire. The cruisers came on gallantly nevertheless and tried to find their way into the harbor without any guiding lights and under heavy fire. One ship was sunk, but not in such position as to block the channel.

On the night of May 9-10 a second attempt was made; this time the block ship was the glorious *Vindictive* herself. Somehow the Germans at Ostend got wind of the impending attack, for when the cruiser put in appearance the sky burst into a fiery illumination of star shells and every gun they bore opened upon her and her consorts. Leaving most of her crew outside, the *Vindictive* under a handful of officers and men entered between the Ostend piers, blew up and sank. The men were removed to a motor launch and regained their friends outside, although the launch was repeatedly hit by the batteries and narrowly escaped going to the bottom before completing her task. She was then so badly wrecked that the British sank her rather than attempt to bring her back to Dover. This second attack may fairly be called successful, as the sunken *Vindictive* made the harbor useless except for the smallest craft. The loss entailed was comparatively light, 47 in all, of whom 18 were killed or missing.

NAVAL LOSSES DURING THE WORLD WAR

Official naval losses of Great Britain in the World War are given in *Brassey's Naval Annual* for 1919 as follows:

Battleships 13,* battle cruisers 3, cruisers 27 (light 3), torpedo gun boats 10, coast defense ship 1, sloops 18, river gun boats 2, flotilla leaders 3, destroyers 62, torpedo boats 10, submarines 54, air craft carriers 3, patrol boats 2, mine layers 2, armed merchant cruisers 17, armed boarding steamers 13, mine sweepers 2, hospital ships 2.

According to the same authority France suffered the loss of 5 battleships, 5 cruisers, 11 destroyers, 7 torpedo boats, 14 submarines and 4 merchant cruisers.

Russia lost 4 battleships, 3 cruisers, 20 destroyers, and 12 submarines.

Japan lost 1 battleship, 1 battle cruiser, 3 light cruisers, and 2 destroyers.

Italy lost 3 battleships, 2 cruisers, 8 destroyers, 12 torpedo boats.

The German losses included 1 battleship, 1 battle cruiser, 6 cruisers, 17 light cruisers, 8 gun boats, 69 destroyers, 53 torpedo boats, 197 submarines (exclusive of mine-sweepers-trawlers and patrol vessels).

Austria lost 3 battleships, 2 light cruisers, 5 destroyers, 4 torpedo boats, 8 submarines and 3 monitors.

Turkey lost 1 battleship, 1 armed merchant cruiser, 2 light cruisers, 4 gun boats, 2 destroyers and 5 torpedo boats.

The United States lost the cruiser *San Diego* (by mine, off Fire Island, July 19, 1918); the destroyer *Chauncey* (by collision in the Atlantic, November 19, 1917); the destroyer *Jacob Jones* (by collision off Scilly Islands, December 6, 1917); the gun boat *Schurz* (sunk in collision June 21, 1918); the submarine *F-1* (sunk in collision December 17, 1917); the armed yachts *Alcedo* and *Wakida II*; the armed trawlers *Bauman* and *Richboth*; the fuel ship *Cyclops*; the battleship *Minnesota* (mined September 29, 1918, but reached port).

*The British battleships lost were: *Audacious*, *Britannia*, *Bulwark*, *Cornwallis*, *Frimdith*, *Goliath*, *Irresistible*, *King Edward VII*, *Majestic*, *Ocean*, *Russell*, *Triumph*, *Vanguard*; the battle cruisers lost were: *Indefatigable*, *Invincible*, *Queen Mary*.

SECTION IV—NAVAL DEVELOPMENTS

NEW IDEAS FOR WARFARE ON THE SEA

Monitors and Seaplanes—Kite Balloons and Dirigibles—"Q" Ships and "Hush" Ships—Brave Work by Trawlers—Anti-Submarine Weapons

IN the preceding chapters some of the naval problems of the war have already been discussed, and some of the solutions to these problems as well. The menace of the submarine is written across the entire naval story of the war, and in the chapters on submarines and those on the naval engagements we have already seen not only what the submarine could do but also some of the measures, like the destroyer screen, designed to check it. The pages that follow will take up in more detail the devices and the types of vessels called into existence by the submarine and also by the other factors peculiar to the problems of this war. For the first time in history navies fought not only on the sea but also under the sea and over it. The result was an extraordinary development of novel instruments for offense and defense.

I

THE RETURN OF THE MONITOR

BY a curious paradox, however, many of the innovations of the war were relics of the past. Body and head armor—revived after centuries of disuse, asphyxiating gas—harking back to the ancient Chinese "stink pot," liquid fire—a revival of Greek fire, and certain forms of trench mortar that are reproductions of the catapult—these and many more seemed to take the war as far backward as other new and unheard-of weapons seemed to project it forward. These curious revivals of the ancient past belong to the fighting on land. On the sea, however, there was one interesting revival of an obsolete instrument, although this instance does not go back to any such antiquity as the weapons resurrected by the conditions of trench warfare. This naval example is the monitor.

Before the war began the monitor had been regarded as obsolete. No first class navies were building monitors. At the end of the first year of the war, however, monitors were operating in waters from the Flanders coast to East Africa, proving their serviceableness

and developing greatly in power and effectiveness.

The history of this epoch-making type of ship will bear retelling. In the early fifties John Ericsson had submitted to Napoleon III. the plans for a turret ship "which could destroy with ease and impunity to itself the largest ironclad frigates now afloat." The Emperor, however, rejected it on the ground that its armament was too small for the cost involved. Ericsson next turned to England. The attitude of the British Admiralty was very much the same toward the monitor idea as it had been fifty years before toward Fulton's invention of a submarine. The inventor then came to the United States. Shortly afterward the outbreak of the Civil War gave him his opportunity. It was known that the Confederates were working on the hull of the sunken frigate *Merrimac* at Norfolk, transforming her into some new-fangled kind of ironclad monster, and the Union Navy had nothing to match it. The naval officers who studied Ericsson's plans had never seen anything like it; a large majority laughed it to scorn, but a sufficient number on the Board were willing to stake their professional reputations on giving it a trial, and in October,

1861, the keel of the first monitor was laid at New York.

At every stage of the building Ericsson superintended the work, so that when she was completed, 118 days after the laying of the keel, he was able to say proudly: "The *Monitor* is mine, and no change shall be made." The statement was literally true, for he had designed every detail of hull, gun turret, engines, and contributed forty patentable devices. Indeed, when she set out on her trip to Hampton Roads under a volunteer crew, she was still Ericsson's, for she had not yet been formally accepted by the government.

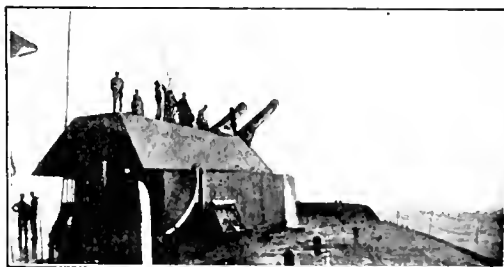
On that journey down the coast she came very near foundering more than once in the heavy seas, for she was most emphatically not a sea-going craft; and when she entered Hampton Roads, lighted by the glare of the burning *Congress*, it was an exhausted crew that had to postpone sleep in order to clear ship for action with the redoubtable *Merrimac* the next morning. The story of that famous duel needs no repetition. Its immediate result was to cause the Federal Government to build monitors as fast as possible. The name was something to conjure by, and the authorities forgot in their enthusiasm that the type was not adapted and not intended by its inventor for sea-going purposes. The original *Monitor* herself went down in a gale off Cape Hatteras and all subsequent monitors showed the same defect.

For this reason England declined to build monitors, for her Navy had to be sea-going or nothing, but under the influence of the type her ironclads were equipped with the revolving turret, and their freeboard was lowered. Other nations built monitors up to about 1870, when they were gradually abandoned. In America they were still regarded as useful in coast defense, and monitors remained in commission well after the beginning of the present century. Four new ones, in fact, were built after the Spanish War, but the year 1914 found the United States in agreement with the rest of the world in regarding the monitor as quite obsolete.

MONITORS IN THE WORLD WAR

The sudden reëntree of the turret ship into the British Navy is described by a writer in the *Engineer*:

"The *Severn*, *Mersey* and *Humber* were the first vessels of this type to be placed in service for the British Navy at the outbreak of war. They had been ordered by the Brazilian Government from Vickers Limited, and were launched in 1913 as the *Solimões*, *Madeira* and *Javary*, but were purchased by the British Admiralty in August, 1914. The following particulars are summarized from a lengthy description which appeared in the *Navy League Annual*: Length, 265 feet; breadth, 49 feet; depth, 8 feet 6 inches, with a displacement of about 1,250 tons. The designed speed is 11.5 knots, with a radius of action of 4,000 nautical miles at economical speed. A double bottom extends almost the entire length of the vessel, providing stowage space for feed-water, oil fuel, etc. This double bottom construction is continued up the sides to the upper deck in way of the engines, boiler spaces and magazines, thus adding to the safety



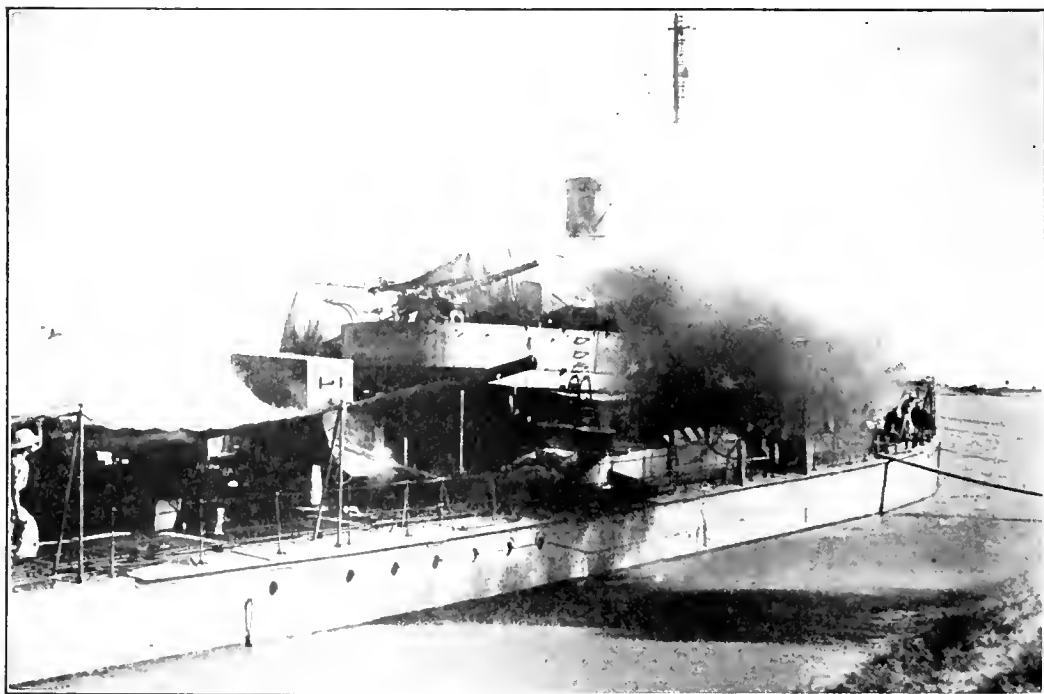
The Gun Turret in a British Monitor

of the ship. The hull, moreover, is separated into a large number of water-tight compartments by transverse and longitudinal bulkheads extending up to a complete steel upper deck, and these compartments form the various store-rooms, magazines, bunkers, auxiliary machinery spaces, etc. The armament consists of two 6-inch quick-firing guns mounted in one armored turret on the upper deck forward, and with electrical machinery for working the guns; two 4.7-inch howitzers on the upper deck aft, four 4.7-inch quick-firing guns on the boat deck, and six machine guns. The sides amidships carry heavy armor, extending from the upper deck to well below the water-line. Forward and aft of this belt armor bulkheads are fitted, and there is thinner plating over the rest of the exposed hull. The upper deck of nickel-steel armor affords protection to the various compartments.

"They formed part of the 'scratch' squadron which, under the late Rear Admiral Hood, stemmed the German advance along the Belgian coast, inflicting extremely heavy casualties on

the enemy, and causing great damage to his transport and material. Owing to their very light draft the three monitors were able to get well inshore and use their guns almost at point-blank range, until the enemy, by bringing up very heavy artillery, compelled them to keep farther out. In these operations, which unquestionably hampered the German advance to a most serious extent, the *Mersey* was the only vessel to receive important damage. Ten months later the *Severn* and *Mersey* unexpectedly appeared in the Rufiji estuary, East

fied in dispatches, and adds the following note: 'According to published descriptions, these vessels are high-free-board, sea-going vessels. Their beam is large, and they are said to maneuver indifferently. It has been publicly stated that 15-inch guns, intended for the new *Royal Sovereign* class of dreadnoughts, were appropriated for arming these ships. The 14-inch guns, ordered in America for the Greek battle cruiser *Wasilefs Giorgios* (ex-*Salamis*), building in Germany, were also purchased for these monitors.' Other vessels, presumably of a much smaller type,



© Underwood and Underwood.

A British Monitor in Action on the Tigris

This type of war vessel was most successful in the Mesopotamian campaign at the Dardanelles, and on the Piave river in Italy.

Africa, where they succeeded in totally destroying by gun-fire the German cruiser *Königsberg*, which had been blockaded in the river for nearly a year.

THEIR SUCCESS AT THE DARDANELLES

"Of the larger monitors, built specially for the war, it is not permissible to give details, though some idea of their main features was obtained from Mr. Ashmead-Bartlett's letters from the Dardanelles. Jane's *Fighting Ships* for 1916 mentions the *General Crawford*, *Lord Clive*, and other vessels which have been speci-

have been alluded to in official dispatches from almost every theater of the naval war—one, the *M-30*, was reported as sunk by Turkish gun-fire in an admiralty communiqué of June 3, 1916.

"In certain quarters severe strictures were passed upon the admiralty for having spent so much time, money, and labor on the creation of this fleet of monitors, the critics maintaining that the vessels in question were of extremely limited value. This contention, however, is not borne out by our knowledge of what the monitors have accomplished. At Gallipoli, when the appearance of German submarines compelled the Allied squadron to withdraw temporarily, the posi-

tion of the invading army, bereft of naval support, would have become highly critical had it not been for the timely arrival of our monitors. Indeed, it is not too much to say that their presence saved the situation. Practically immune from torpedo attack, they were able to maintain a steady bombardment of the Turkish positions with their big guns, and it was largely owing to their efficient work that the evacuation was carried out so successfully."

In the summer of 1915 the monitors arrived on the east coast of Africa on the trail of the *Königsberg*, which was destroyed by their fire in the Rufiji River, as described in the story of the *Königsberg* told in the chapter on sea raiders. It is noteworthy that the *Severn* and the *Mersey* had by this time made a new record for a monitor's ocean voyaging. Evidently these new monitors had acquired sea-going qualities unknown to their predecessors. In August they were back again in the North Sea, starting out with another squadron against the defenses of the Belgian coast. Again the monitors proved their qualities of hard-hitting and endurance. They were repeatedly struck by heavy guns, but they stayed afloat, and did not retire until they had given fully as good as they had received.

BRITISH MONITORS AT TRIESTE

After this monitors were in demand in every zone of naval activity. Small ones were built for river work, as in the Somme, the Tigris, and later in the Piave, and larger ones, as well, for coast bombardment, mounting the heaviest naval ordnance in existence. A dispatch to the *New York Times*, cabled by the correspondent Percival Gibbon, describes an attack by British monitors on Trieste:

"Dawn breaks early at this season. On Thursday last [May 24, 1917] it was already light before five o'clock, when English monitors wallowed out to their firing stations off these island-dotted lagoons and got into position for action. They were veterans of the Dardanelles and had been assigned long since to a part in the great battle which the Italian troops ashore upon the Carso were driving so effectually home.

"Their post was midway up the gulf, where their great guns could bear upon airplane hangars and multifarious military establishments which surrounded Prosecco and Contovello.

"When the first gun spoke a great shell went hurtling into the amethyst distance, and an Ital-

ian scouting hydroplane duly marked it down true and precise upon the railway line south of Prosecco. The second shot landed a little north of the first. Fortune and good shooting contrived that it should hit the railway again at a point where a Trieste-bound train was passing. The train vanished in ghastly ruin.



Under a gun and under cover.

The Austrian Cruiser *Feuta*

"Then other monitors arrived at their stations and the bombardment continued in tremendous measured rhythm. Each monitor fired for two hours. They smashed the hangars, flattened the railway station of Prosecco, destroyed the railway and viaduct, and produced a great fire near Contovello, whose peak of bright flame was visible from here."

Meanwhile the Austrians themselves had found the monitor a useful tool. In the campaign against Serbia their river monitors on the Danube proved of the greatest military value, and they served to smash the British Admiral Trowbridge's blockade of that river. The Austrians had about eight of these monitors, small craft between 300 and 500 tons, armed with 4.7-inch guns, and they were of all ages from one launched in 1871 to others born of the war.

Of all the vessels of the monitor type apparently only one was lost. The *M-30* was penetrated by a shot off the Dardanelles in

1916 and destroyed by fire. As for the perils of mines and submarines, which proved fatal to so many ships of every other class on the navy list, the monitor seemed to be perfectly immune. The original monitors, *Severn*, *Mersey* and *Humber*, were apparently not much different from types built for the American Navy after the Spanish War, but the later ones had special structural features that are unique and that probably go far toward accounting for the immunity of this type. These features attracted notice the moment the new monitors arrived off the Dardanelles in July, 1915. It is noteworthy also that these new monitors were designed, built, and put on the firing line in six months.

A GREAT SURPRISE FOR THE TURK

A correspondent of the *Daily Mail* gave his impression of their peculiarities of appearance and construction:

"The arrival of these vessels on the 3rd made a sensation not only among the enemy, but also among our own troops. One afternoon, a floating object of extraordinary aspect appeared at the entrance of the port of Kefhalos. It seemed that instead of proceeding in a straight line, it reached its anchorage in zigzag lines, dancing about like a great goose. At a certain distance it was impossible to say whether one was looking at it from the side, the bow, or the stern, so completely round did it appear. Its parapets sustained a bridge, above which nothing was visible but a very large turret, from which protruded the muzzles of two huge guns.

"In the center of the bridge rose like a giant of some Californian forest, a tripod mast bearing at its end a kind of oblong jewel-box—an exact replica, on a very large scale, of the box wherein the Dalai Lama carries about with him the ashes of his previous incarnation.

"Our first astonishment was followed by another, when the crew prepared to take a bath. It seemed as if they were all able to walk on the water. After having descended a ladder, instead of getting into the sea they proceeded to walk in single file the length of their ship, and then, standing elbow to elbow, they all dived, to reappear shortly at the surface.

"We went out in a boat to examine this odd phenomenon and found that just below the water the sides of the ship bulged out slightly for about ten feet, then curving inward toward the keel, and thus forming an exterior platform just a wash.

"Here lie the secret and the mystery of these vessels. In this bulging, the builder has concentrated his ingenuity to beat the submarine. If a torpedo strikes the hull it will explode amid a variety of substances whose nature is unknown to me, but which protect the hull against any serious injury.

"These big monitors carry two 14-inch guns, and several pieces of artillery for use against aircraft.

"The first time one of these monitors appeared at the entrance of the Dardanelles, its aspect was a great surprise to the old Turk. This surprise increased when he heard the roar of the 14-inch guns, each sending three-quarters of a ton of projectile to a distance of 15 miles.

"Later, three other large monitors arrived, which gave us eight 14-inch guns . . . besides a large number of smaller monitors of all shapes and sizes.

"The construction of these monitors was undertaken to meet a new need—that of vessels of powerful armament, but practically safe from submarine-attack."

It is clear from this and the testimony of other observers that the British monitor is not a thing of grace and beauty. The same correspondent says of the first one he saw, "she looked more like a Chinese pagoda than a ship, but she talked like one all right, as the Turks found a few days later when she went out and tried a few shots at Asia for practice."

At any rate the old monitor "came back." In the World War she fulfilled completely Ericsson's conception, that of an armored vessel presenting a small target, armed with heavy guns, and capable of operating in the shallow waters of rivers or coasts. And while the monitor of today has not gained in handiness and speed over its prototype of 1862, it has made a great and important advance in ability to keep the sea.

II

THE NAVY OF THE AIR: SEAPLANES

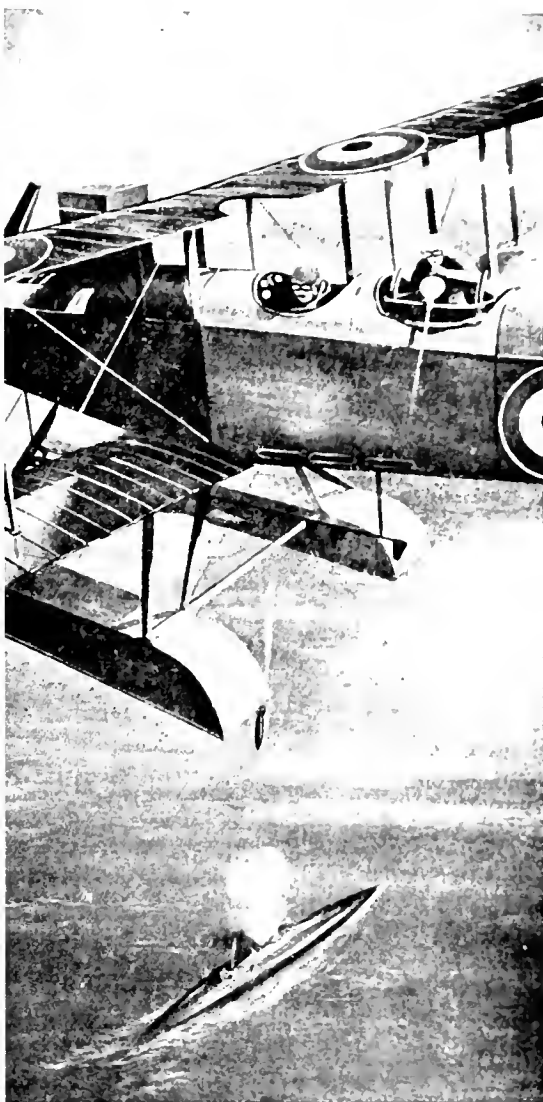
WHEN the monitors bombarded the German lines on the Belgian coast their ranges were determined for them by aircraft, the airplanes of the British Navy; and when two of the same monitors pounded the

Königsberg to a finish in the Rufiji river they got the range from a seaplane. The latter was not long in the air before she was shot down, but she had stayed up long enough to "spot" sufficiently well for the guns of the *Severn*, whose guns did for the German raider in about fifteen minutes. Indeed it was naval air craft that discovered the *Königsberg's* hiding place in the first place. Thus the "obsolete" monitor and the newest wrinkle in naval equipment worked together from the very outset of the war.

Just how new the idea of naval airplanes was when England declared war may be realized from the fact that there was organized a mere handful of men calling themselves the "Naval Wing" of the Royal Flying Corps in the summer of 1912. On July 1, 1914, the Royal Naval Air Service came into existence for the first time as a separate unit, and a month or so later this fledgling of the Navy was called upon to try its wings in the tremendous gale of war. In the summer of 1914, the British Navy possessed about 20 planes, of all varieties of model and engine,—except an engine of British manufacture.

As we look back on the enormous value of these airplanes in the war, especially in the pursuit of the U-boat, it seems strange that the British government was so slow in appreciating their importance. Before the war, indeed, little official interest had been taken in aircraft for either Army or Navy. But the Germans were hardly better in this respect. Up to 1912, the War Office was obsessed with the idea of Zeppelins and other dirigibles. Still, when the Germans turned to the task of producing airplanes on a large scale they had the advantage of manufacturers who had for some time been turning out light motors and propellers for the dirigibles, while the English had to break ground in a new enterprise.

As the powers of the submarine were demonstrated by the progress of the war, the seaplane sprang into importance as the means of combating it. When Blériot was making his historic flight over the English Channel in 1909, he saw a line of British submarines under water and noted the fact. It is this power of an airplane to discover a submarine, even at a considerable depth, and attack it by bombs before the latter discovers the presence of an enemy, that immediately gave these



Bombing a Submarine from the Air

machines a high importance as an effective weapon against an under-sea craft.

THE FIRST BOMBING OF A U-BOAT

The first recorded seaplane bombing of a U-boat took place on August 26, 1915. In November of the same year another officer of the Navy, Lieutenant Viney, in a French machine, made another killing of the same sort. As the incident is typical of the many other attacks of submarines made by aircraft off the French and Belgian coasts, it is worth recording in the officer's own words:

"It was noon on Sunday. We had left half an hour before on a French biplane to look for submarines which were reported nearby. We rose 10,000 feet, and had been cruising about for some time when we saw two submarines five miles off shore west of Nieuport.

"It was an ideal spot for our purpose. The sea was shallow, giving the submarines little chance of escape. By plunging in wide spirals we descended toward one of the boats, which, being above a sand bank, could not dive. She made desperate efforts to get away, steering in wild zig-zags.

"We realized we could not get her, and so turned our attention to the other boat. Apparently it was more difficult to handle her, for despite all endeavors she failed to get out of the circle. We raced as we pounced down on her. We came down to about 300 feet above the sea. When we were certain of not missing, we let go the first bomb and had the satisfaction of seeing we had made a hit. Even with the naked eye we could observe that serious damage had been inflicted on the deck of the boat.

"We circled around twice more over the doomed submarine. A second bomb did the rest of the work. She broke in half and sank.

"We did not wait to see more. Moments were precious. We had to get back to Dunkirk as quickly as possible, for the submarines were sure to have given warning, and we were liable to find our retreat cut off by the enemy's aeroplanes if we lingered."

SEAPLANES ACCOUNT FOR THREE U-BOATS

Such episodes were rare in 1915, but in the last year of the war they were of frequent occurrence. For example, on one day, April 8, 1918, the Bristol authorities published the record of three successful attacks made by seaplanes on submarines:

"A British seaplane, while patrolling the Channel, sighted a U-boat traveling on the surface at low speed. The submarine started to dive, but before she could get quite under the seaplane was upon her and dropped a couple of bombs which crumpled up her conning tower and periscope. Two other bombs were dropped and the submarine disappeared, leaving on the surface indications that she had been destroyed.

"In hazy weather quite recently a large seaplane of ours encountered a big U-boat, on the deck of which a man was standing at a gun.

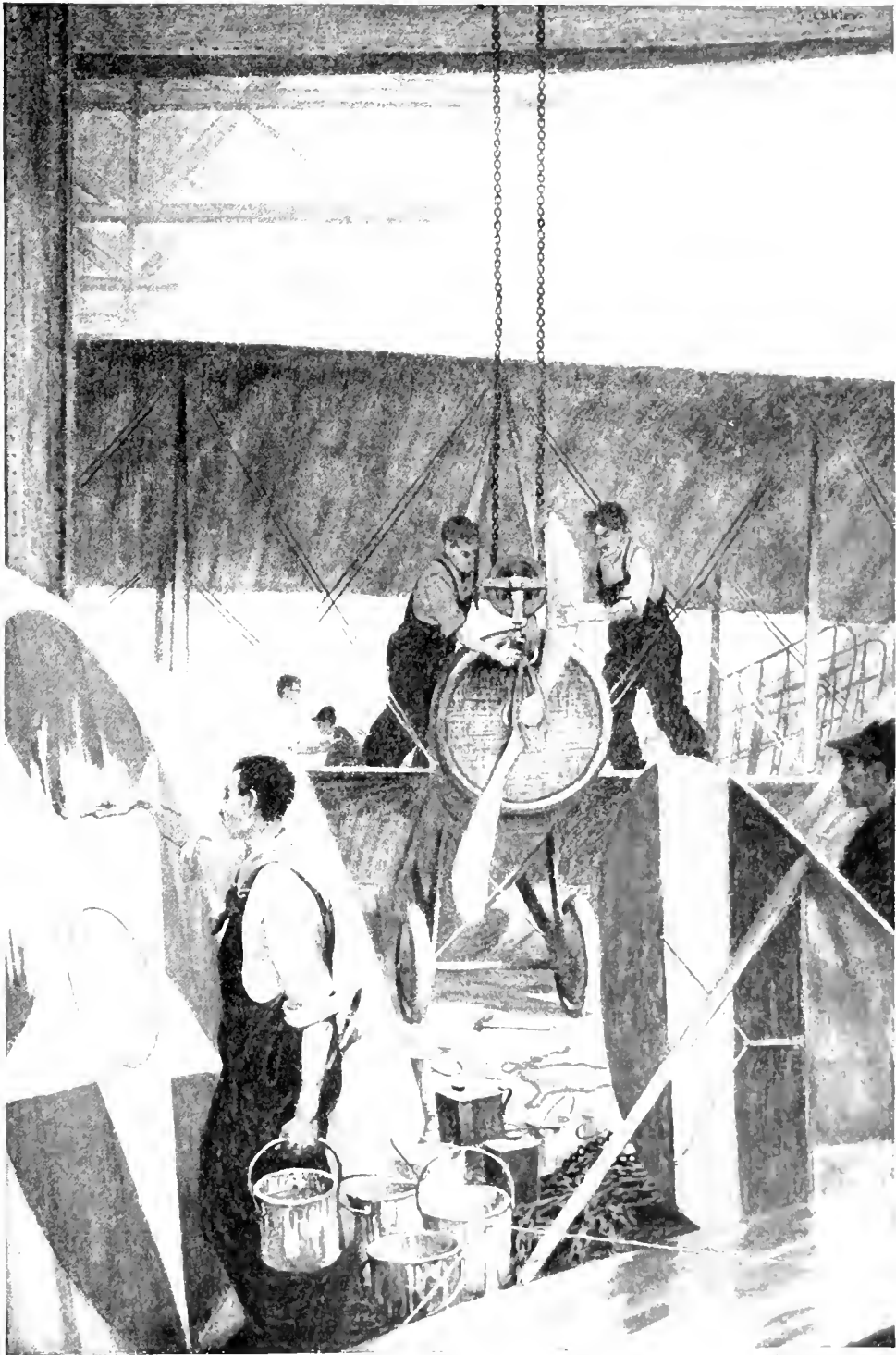
Flying directly overhead, the seaplane dropped a bomb and at the same time took a photograph which, when developed, showed that the bomb had ripped a large hole in the U-boat's deck. Gun flashes were now noticed in the mist, out of which came three more U-boats and three German destroyers. All made for the damaged submarine, firing heavily upon the seaplane as they approached her. Then a couple of German seaplanes turned up and joined in the fray. But the British machine was not to be driven off. It continued bombing the submarine until the latter was sunk. By the time this happened the seaplane had exhausted all its projectiles. Having no further means of continuing the fight, the seaplane wirelessed back a message giving the location of the enemy's flotilla and then sped away safely home.

"Two of our seaplanes spotted a large U-boat on the surface and dived to attack her. The first machine dropped a bomb which struck the submarine on the side, causing her to heel over and begin to sink. The second machine then bombed the U-boat by her conning-tower, and the pair together continued pelting the pirate with projectiles until satisfied that she had been destroyed. On another occasion one of our seaplanes dived from over 4,000 feet and dropped a bomb plump upon a very large German submarine, which at once turned over and sank."

SPOTTING A U-BOAT FROM ABOVE

Of course conditions are not always favorable for detecting submarines under water. The problem of seeing a submerged enemy and the principles of light involved are thus explained by Robert G. Skerrett in an article published by the *Illustrated World*:

"In clear waters like those in the West Indies, with a bright sandy bottom, a submerged submarine can be seen from aloft when lying or running below the surface fifty feet or more. Ordinarily, detection of this sort is limited to a depth of twenty to thirty feet. In parts of the North Sea and the British Channel . . . the waters are discolored, and an observer in a flying seaplane would probably be able to see but a very few feet below the surface. Just the same, the man in the flying-machine, well up in the air, would be better off than the look-outs stationed anywhere aboard a steaming vessel. Why is this? Simply because the airman can detect the submerged foe, while the look-out on the ship is none the wiser until the U-boat's periscope rises above the waves.



Building an Aeroplane



"This matter of seeing into the depths from a considerable height when it is impossible to do so close to the water seems puzzling to many people. The principles involved are extremely simple. First, the wave motion, which interferes with penetrative vision near the surface of the sea, is flattened out, as it were, on being viewed directly from above and several hundred feet aloft. Next, the reflected beams of light do not shine into the observer's eyes, as is the case when close to the water, and, as a result, it is possible to look below the surface just as one can see into an opposite house even though the windows be closed. Greater power of penetration is secured when the light shines from behind and well above the observer's head. In exactly the same way, more can be discerned far back in the room of the neighbor's house when the light shines squarely into the window. In other words, the eye sees deeper into the water when the line of sight is coincident with the path of the rays of light.

"On fairly calm days, although the details of the submarine are by no means apparent, an airplane observer five hundred feet in the air usually can see the dark shadow of a submarine at the greatest depth used for underwater cruising—about one hundred feet—and as detection is all that is necessary, the air scout has been adjudged satisfactory."

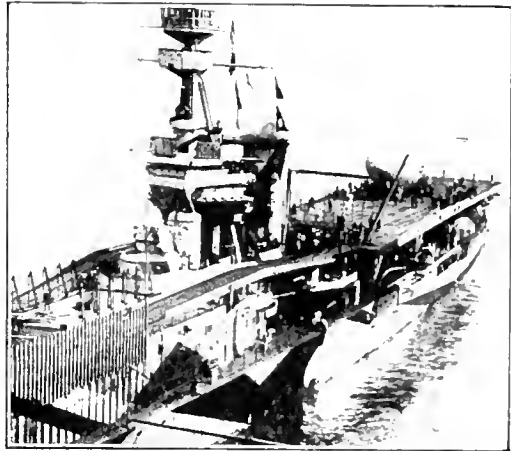
The service of the seaplane covered more than spotting and bombing U-boats. In the summer of 1916 a British seaplane bombed a Turkish transport and sank it with its load of troops and supplies. While Kut-el-Amara was besieged, seaplanes made regular trips, carrying thousands of pounds of food to the beleaguered British force. Both the British and the Germans made successful use of an American admiral's invention, the torpedo plane; that is, a seaplane armed with a torpedo. The full possibilities of this invention, however, were not utilized, or even realized till late in the war. The torpedo plane will be taken up in greater detail among the contributions of the American Navy to the war.

So important to the work of the fleet is the seaplane's range of vision that it came to be relied on increasingly as the "eyes" of the Navy, the means by which naval reconnaissances were made, whether scouting ahead of a fleet in movement or of a convoy of merchantmen, in spotting the naval guns, as in operations already described, or in gleaning

information of an enemy's base. Planes were carried on cruisers adapted for the purpose, special "mother" ships for seaplanes were built and added to the fleet, and late in the war a special catapult was devised for use in the American Navy by which a plane might leave a battleship's deck for a flight. It will be remembered that contact with the Germans, resulting in the battle of Jutland, was established by means of an aerial scout flying from the deck of the converted liner *Galatea*.

SEAPLANES FIGHT SEAPLANES

Scouting and dropping bombs on submarines do not tell the whole story of the work of the



© Underwood and Underwood.

A Floating Aerodrome

The British ship *Furious*, which carried not only airplanes for use at sea, but also a blimp.

seaplanes; there was fighting to be done, fighting against the air forces of the enemy and against the equally perilous forces of the North Sea gales. An English writer in the *Living Age* gives a hint of both. He says:

"The British seaplane squadrons are frequently met by enemy seaplanes. In the North Sea two British seaplanes met five of the enemy. Two of the enemy attacked one of the British seaplanes, which was a long way behind its leader, and which put up a running fight. The leading British seaplane maneuvered to attack the three enemy single-seaters from their rear, at a range of 200 to 300 yards. Steering zig-zag, and firing to the front, he hit a single-seater, which turned sharply to port, side-

slipped, and crashed into the sea, whereupon the rest of the Germans incontinently fled.

"In another fight over the North Sea a British Sopwith, a long way from his base, perceiving an enemy, attacked him 'from the sun,' as the phrase goes. The attacker thus has the light behind him, and the attacked has it right in his eyes. The Sopwith opened fire at fifty yards, whereupon the German dived, streaming smoke; one of his wings dropped off, and he fell headlong into the sea.

"But it is not all victory. There is a sad record of a seaplane flying somewhere far out to sea, whose signals of distress were received, but owing to some defect in her signaling apparatus, her description of her position was unintelligible. A gale was blowing up; seaplanes went in the teeth of it to search for the craft in distress; but they could not find her. The wreck of her was afterwards washed on shore. Pilot and observer were never seen again. The war in the air is a boys' war; and these two lads, lost in the air many miles out at sea, fought to the last. Their engine was out of order; the wireless would not work properly; the darkness was gathering, and a storm was rising. Swinging and buffeted high up in the night, they knew that the end was approaching. Perhaps they put the nose of the machine down at the last, on the chance of riding out the gale on the floats. Other lads have done it; have clung to the floats for days and nights; and when they were taken off they were rigid like wood. But whatever happened on that night, be sure the boys' hearts did not fail them. . . ."

It is only a decade ago that Blériot performed what was then considered the perilous feat of crossing the Channel in a heavier-than-air machine. Before the peace treaty was signed three American seaplanes had crossed the Atlantic from Newfoundland to the Azores, and one of these, the *NC-4* (Lieut. Commander Read), continued the flight to Lisbon and then to Plymouth, England. Scarcely had that feat been accomplished when an English plane (Capt. Alcock and Lieut. Brown) made the first non-stop flight across the Atlantic to Ireland, covering the distance in 16 hours. What the effect of such flights will be on the future of nations and navies remains to be seen. The airplane is even newer than the submarine, and its potentialities even more extensive. Developed to a high degree by its value in war, it may in the future

do far more than treaties or conventions to unite the civilized peoples of the world and preserve peace.

III

THE KITE-BALLOONS

ASSOCIATED with the seaplane in its operations of scouting and spotting, we find the lighter-than-air types, the kite-balloons and dirigibles. For the invention of the kite-balloon the credit must go to the Germans, who nearly twenty years ago developed it for the use of the Army. The French, and for that matter practically all the rest of the military experts, regarded the captive spherical balloon as the last word in a stationary air scout; but the kite-balloon is a vast improvement. It combines the principles of the balloon and the kite, and while the former can be sent up only on calm days, the latter can be used in any weather up to a stiff 30-mile gale. Devised in the first place for directing artillery fire for the Army, its usefulness for the Navy was proved very rapidly, and early in the war the kite-balloon became a part of the fleet's scouting equipment along with the seaplanes.

Lieut. Robert Neeser, writing in the *Scientific American*, thus describes the origin and growth of this curious contrivance:

"Before the outbreak of the European war, the kite-balloon was not looked upon with favor by any of the military or naval powers, except Germany and Austria. The French army in 1914 had a number of spherical balloons, but these could not compete with the more stable *drachen balloon* with which the invading forces were equipped. Fortunately for the Allies, the Belgian government had a specimen *drachen* which it had purchased from Germany some time previous, and this, as soon as it became apparent how greatly superior the kite-balloon really was, was copied by the various Allied services until they themselves could devise something better. It was in this way that the French, after experiments held at the front under actual war conditions, produced their famous *Cacquot* balloon. Thanks to the ingenuity of the French inventors, the Allies thereby obtained the service of a kite-balloon which not only embodied all the good qualities of the *drachen balloon*, but in addition proved capable

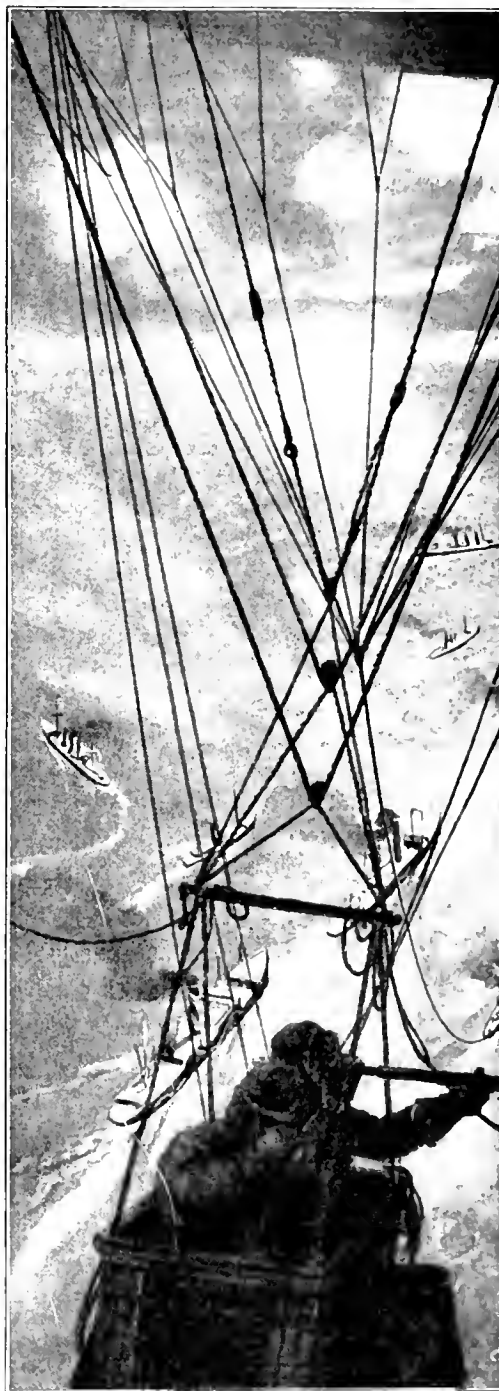
of being used in a high wind besides offering greater facilities for observation.

"At sea, the use of kite-balloons was unknown until the year 1916, when the constantly increasing activities of the German submarines caused the Allied navies to resort to novel measures for combating this new pest of the seas. The British naval airmen were the first to venture experiments in this new field, and the trials were so satisfactory, notably in the case of the 'sausage' which spotted for the *Queen Elizabeth* when the latter was firing across the Gallipoli Peninsula in order to reach the Turkish forts on the Asiatic shore of the straits, that the French also decided to adopt the *balloon captif* as a recognized type of naval aircraft.

VARIOUS USES OF KITE-BALLOONS

"It is evident that the advantages offered by these aerial observation posts in extending the range of vision of the naval lookouts charged with the duty of reporting the presence of the enemy's submarines, could not be overlooked. Anchored over some shore station, the observers surveyed a considerable area of the waters adjacent to the roadstead, inlet, channel, or sound, which they were assigned to watch. On the water, the rôle of the kite-balloon was the same, only instead of being anchored on terra firma, the end of the cable would be made fast to the deck of some trawler or fast steaming patrol vessel cruising on the surface of the sea. In this way the range of vision of the mast-head lookout on the warship could be trebled or quadrupled, depending upon the condition of the atmosphere. When towed at a height of two or three hundred yards, the 'horizon' of the aerial observer extended for a distance of about thirty miles.

"It is from this lofty perch that the presence of floating mines, of obstructions, of vessels in distress, and of hostile submarines, are thus discovered. A U-boat cruising on the surface becomes plainly visible to the aerial observer at a distance of several miles, while the foamy streak of the periscope's wake cannot remain unnoticed for any length of time. The kite-balloon, by its mere presence, therefore, causes the enemy's commerce raiders to seek the protection of the ocean's depths. In this way the submarine's offensive powers are curtailed almost immediately from the moment that it comes within the 'zone' of the kite-balloon. This prevents the German commander from coming to the surface to use his deck guns, and this factor alone is an extremely important one. If, on the other hand, the enemy persists in coming nearer



© Scientific American.

In a Kite-Balloon Attached to a Convoy

Kite-balloons were hauled by destroyers, and the occupants were able to spot U-boats at a considerable distance and report their observations over a telephone line to the ships below.

in order to use his torpedoes, he can carry out his 'approach' only beneath the surface, and here again the aerial observer has the advantage. While running submerged, the submarine must come to the surface occasionally in order to take a sight with its periscope. This maneuver, however, instantly betrays the submarine's movements to the observer and permits him to warn the patrol-boat, either by signal or telephone, of each change in course, or of the direction from which a torpedo has been fired (in case the submarine commander decides to strike by launching one of his subsurface missiles) long before the captain on the man-o'-war's bridge can himself see the threatened move. The kite-balloons have also been found useful in connection with the all-important operations of mine-sweeping and of guiding the convoys and merchant vessels through navigable waters.

"The British Navy solved the problem of housing its kite-balloons at sea by the creation of 'balloon transports' such as were first used during the naval operations in the Dardanelles. . . . Up to the present time, there has been no occasion to use kite-balloons in connection with naval operations . . . but it seems only logical that at sea their rôle should be . . . to act as an aerial eye for the admiral, whom modern naval science has doomed to direct his fleet from within the steel walls of a conning-tower, as well as for the gunner, whom the tremendous power and range of modern weapons has destined to fight an enemy below the horizon."

IV

THE DIRIGIBLES

THE rapid development in seaplanes and kite-balloons was reflected in the similar development of the airship. Before the war the Germans had led the way in this type also, having devised the famous Zeppelins and Parsifals, but the exigencies of war that had stimulated the creation of other kinds of aircraft for the Allies produced dirigibles also. And these were attached to the sea service no less than to the land.

A curious hybrid between the airship proper and the airplane is the "Blimp." This is a cigar-shaped gas bag about 150 feet long to which is suspended an airplane's body, with seating capacity for the pilot and the observer, and engine and fuel tanks capable of cruising some ten hours at the rate of between 35 and

40 miles per hour. The Blimp was equipped also with wireless set, machine gun, bombs, and camera. The prime duty of the Blimp was to undertake the near-coast patrol.

For work farther out a larger dirigible was required, the C. P., or Coast Patrol airship. These scouted on wider radiuses, looking for submarines well out at sea, and locating newly laid mine fields. A good picture of the service of one of these C. P.'s is given by a writer in the *Living Age*:

THE WORK OF A COAST-PATROL AIRSHIP

"Floating between the gray cope of heaven and the wrinkled plain of the sea hangs an airship. She wears an aspect of brooding over the waters. Her eyes are scanning the moving and whitened field beneath them. Eastward, the dawn fires the sullen wrack; and the somber headlands, their bases ringed about with foam, lighten. Far out to sea, a steamer, looking little as a toy, moves with incredible slowness beneath a plume of smoke; beyond, smears upon the faint horizon indicate other vessels. The men in the car of the airship, swinging level with the wide rim of the sea, have long ago become accustomed to looking down, like the god of the ancients, upon the insects swimming upon the sea he made. They are wholly occupied in seeking for their prey. Presently the watchers discern upon the sliding surface of the water a mark like the print of a bird's foot—a long V, lengthening. It is the wake of a periscope. This is luck indeed.

"The airship tilts downwards, comes level again, and the officer pulls a lever, releasing a bomb. The long dark shape slants swiftly downwards, and plunges. In a few seconds there is a muffled detonation, and a fountain of water leaps high. Another bomb follows, and another. At the same time a wireless message spreads instantaneously from the airship and begins to vibrate in the ears of the signalmen in ships scattered far and wide. At the same time flashing signals are made to the nearer vessels. The airship hovers where she is; and the men mark a dark oily stain spreading, and spreading, and smoothing the waves. It is dotted here and there with pieces of wreckage. Presently five or six trawlers come steaming up to investigate, and the airship glides away. That was a lucky shot.

"More often there is no sign after the bomb has been dropped; or there is a smaller area of spreading oil, denoting what is probably slight damage. An airship, sailing high, once dropped

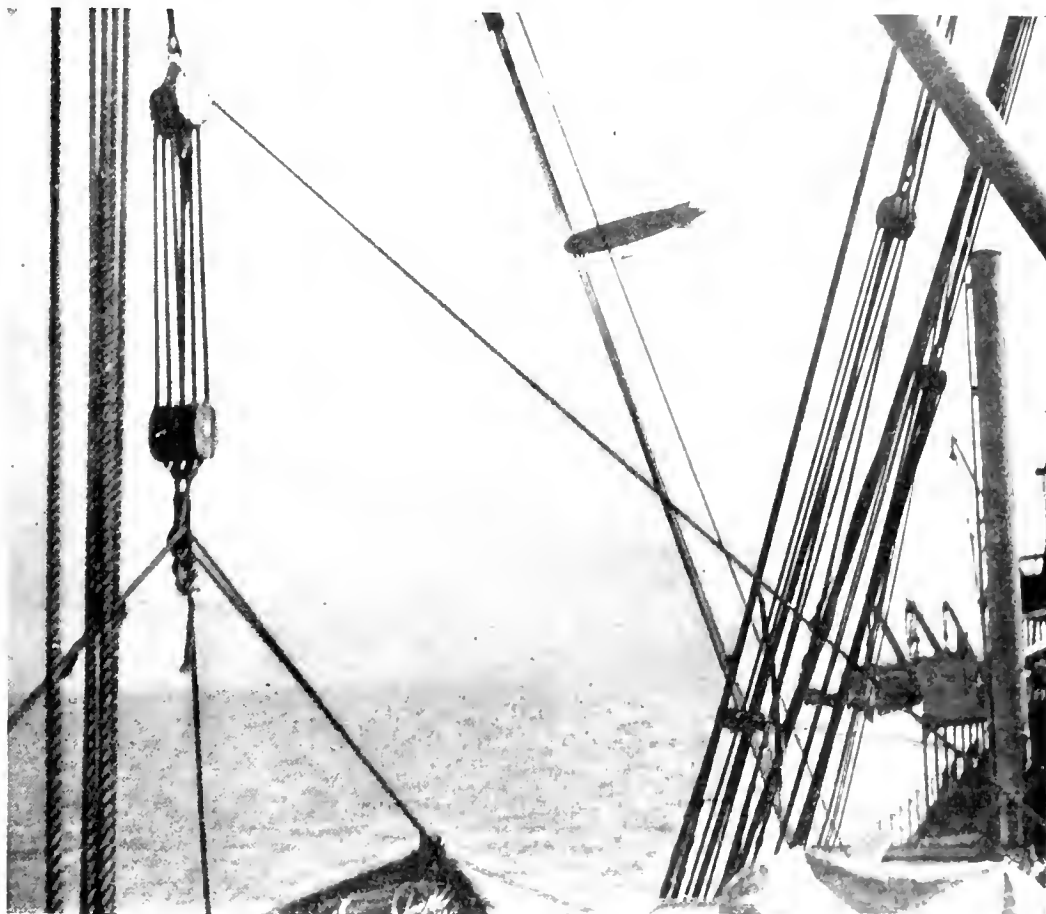
bombs upon certain long, black objects, which were most likely whales.

SIGNALING THE DESTROYERS

"Or the airship assembles the hunting party. Cruising alone, she sights the conning-tower of a submarine a long way off. There is a destroyer

of the sea waiting for the trouble to blow over.

"But whether she goes or stays, every pallid German in the belly of the submarine is also waiting for the deadly depth charge. It is not necessary to hit the vessel. The shock is so tremendous, even at a certain distance, that the lights go out in the submarine, the en-



British Patrol Dirigible

A remarkable photograph of a British coast patrol dirigible conveying an American transport through the submarine zone.

visible, and the destroyer is promptly informed. The men in the airship see the sparks volleying from her wide funnels as she goes about. At the same time the nearest motor launch (or M. L.) flotilla receives the summons, and the leader of the trawler section. These all take their places with the accuracy of a quadrille. They have their own means of discovering the approximate position of the submarine, whether the pirate be escaping or sitting on the bottom

gines are shaken out of gear, and the plates begin to open out like a flower. Explode the depth charge a little nearer to her, and the submarine is shattered. It is what the German must hope for, even pray for; because if the explosion does no more than open leaks, the water, gradually rising in the vessel, compresses the air, and also makes chlorine gas, and death comes by slow torture. Better, in fact, come to the surface and fight it out or surrender. It

has almost come to that with the submarine; that it is safer for her to do murder in the light of day."

The feat of the British dirigible *R-34* in crossing from Scotland to America is eloquent of the things we may expect from this type of aircraft in the future. Scarcely had the American and the British planes made their sensational crossing of the Atlantic when the British airship repeated the exploit, leaving East Fortune, Scotland, on July 1, 1919, and arriving at Mineola, L. I., on July 5th. The *R-34* then recrossed the sea to England, arriving safely after a record flight. The transatlantic flights of both types of aircraft mean that the navies of the future must invest heavily in the warships of the air.

V

NOVELTIES IN SHIP TYPES: THE PATROL BOATS

THE most interesting and significant development of a warship type is the modern submarine. That has already been discussed in connection with the history of the submarine in this war. Other novel types were developed chiefly as devices to meet the peril of the submarine and its related peril, the mine. More than any other naval factor, the destroyer has established itself as the antidote to the submarine, but there were, during the war, many smaller and humbler vessels, forming a huge anti-mine and anti-submarine flotilla round the British Isles, that performed a most hazardous and valuable service to the cause.

Private yachts, having the nimbleness and speed so necessary in an anti-submarine campaign, were pressed into service with a gun or two mounted fore and aft. Built for pleasure and summer cruises, many of these yachts wallowed and pounded months on end in the winter gales of the Bay of Biscay, the Channel, or the North Sea. There was infinite hardship in their work and little glory. Once in a while there came the thrill of a real killing. The Admiralty published the following account of such an exploit performed by one of these yachts in the spring of 1918:

"An SOS signal was picked up by the yacht just after sunset, and half an hour later the periscope of a submarine, which was apparently preparing to attack a merchantman, was sighted. Full speed was ordered, and the yacht drove right over the submarine as the periscope disappeared. Two depth charges were dropped. The captain, while bringing his yacht round to pass over the spot again, noticed a disturbance in the sea. He dropped a third depth charge in the center of the disturbance, which presently died away. One survivor was picked up, but he died from his injuries. The official recognition of the captain of the yacht is recommended by his superior officer, who points out that this lieutenant R. N. R. 'showed great promptness not only in keeping other merchant shipping clear of the danger zone, but in attacking and destroying the submarine.'"

Private yachts, however, were insufficient in number and ill designed for the arduous work required of them. Early in the war all the Allied governments set to work producing special types of submarine chasers. These vessels were of various shapes and sizes, from the Channel motor launches and the small Italian motor boats operating in the Adriatic to the large French, British, and American "chasers," capable of crossing the Atlantic under their own power. But their work was practically the same. Armed with quick-firers and depth charges, and possessing high speed, they patrolled their assigned waters, looking for traces of periscopes or rescuing stricken merchantmen.

BRAVE DEEDS BY THE TRAWLERS

Another class of patrols, not so speedy or so smart as these, but the very backbone of the patrol flotilla nevertheless, were the fishing boats, the "drifters" and "trawlers" of peace times. One perilous and most important service they performed in the war was to fish for the mines laid in British waters by German submarines or raiders. Organized as the Naval Reserve, they acted under orders from the Navy; and certainly as far as the constant facing of danger went, these fishermen in their little tubby vessels "put it all over" any branch of the regular service. They courted destruction with the mines, which it was their business to handle, and they were the prey of any German raider who happened

along. For example, a German destroyer raid in the Channel sent some fourteen trawlers to the bottom in a few minutes. Others were sunk by the shell fire of submarines. But these trawler and drifter men had been accustomed, in following the sea, to take danger as an every-day matter, and a few dangers more or less made no difference to them.

mand of his flotilla of mine-sweepers. Eight mines they destroyed and fished up six more. During ten minutes of this ticklish work his own trawler was injured by explosion, another likewise, and a third was wrecked! The incident is quoted by Professor Dixon, in his *British Navy at War*, and the author goes on to quote as further evidence of the perils



© Scientific American.

An American Submarine Chaser

A large number of these swift craft armed with quick firers were built for the Allies and were employed against the U-boats. These little motorboats were very effective in the anti-U-boat campaign, until the U-boats became more heavily armed.

On the French side of the Channel the hardy seamen of Brittany were busy at the same task. Indeed, it was the sort of job that needed all the workers that could be mustered, and that could never be called finished while the war lasted.

One winter day's work for Lieutenant Parsons of the British Naval Reserve and the trawler service is represented by the following incidents: blown up in his trawler, he escaped without serious injury and continued in com-

of this service a passage from the letter of an officer who describes feeling his way into a German mine field:

"Things began to move rapidly now. There was a constant stream of reports coming from aloft. 'Mine ahead, Sir'; 'Mine on the port bow, Sir'; 'There is one, Sir, right alongside'; and on looking over the bridge I saw a mine about two feet below the surface and so close that we could have touched it with a boat hook. . . . After an hour at last sighted the

mine-sweepers, which had already started work."

TRAWLERS FIGHT A SUBMARINE

Sometimes the trawler had the rare satisfaction of fighting the submarine and beating it. The following story of such a fight appeared in the *London Times* in July, 1918. On this occasion six armed trawlers were returning to port with their cargoes of fish when they met a large submarine.

"It was before 6 o'clock on the morning of June 20th that the submarine suddenly appeared some 7000 yards away on the beam of the leading trawler, and began to fire. She was a big craft of a type not certainly identified, with a couple of large guns of about 6-inches caliber, and one, if not two, smaller ones—a very formidable enemy for trawlers with their low speed and light armament. She showed two small masts and so large a conning tower that the men on the trawler were for a while doubtful if she were a submarine at all.

"The R. N. V. R. officer immediately summoned his little flotilla to form line ahead and follow him; and the ships swung into formation with the precision of warships. The submarine ranged in, and the action opened. All three of the German's guns were bearing on the leading trawler and her shells were falling all round, enveloping her in waterspouts, but never actually hitting her. The next astern, however, was less fortunate; several shells hit her, and she was severely swept by the shrapnel, of which the German fired not fewer than a hundred rounds, and one of her hands was killed and four were wounded. Among these was the gunner, but the remaining hands, though most were injured, kept the gun going.

"The submarine was trying to work ahead of the line; the trawlers, superbly handled and never losing their formation, altered course to keep her on the beam and continued to fire. A shift of wind allowed them to use their smoke boxes and make a temporary screen between themselves and the enemy. The commander's report speaks of the imperturbable courage and never-failing skill of the men who handled the trawlers during the whole of this time. They were dealing with an enemy normally capable of steaming rings round them and heavily enough armed to blow them out of the water; they kept their fire going till they were threatened with lack of ammunition, and when the leading trawler found herself with only fif-

teen rounds left she made ready the signal: 'Prepare to ram.'

"But it did not come to that. The submarine was closing to shorter range, and the second trawler in the line managed to land a shell on the after-part of her. The leading trawler, five minutes later, hit her again with one of the few remaining shells—a direct hit under the submarine's forward gun, which was carried overboard in a burst of flame and smoke of the explosion. The submarine swung round to get her after-gun to bear, and forthwith the leading trawler burst a shell at the base of her big conning-tower. A huge cloud of smoke went up, enveloping the submarine and shutting her from sight. What happened to her is doubtful, but when the smoke cleared away she had disappeared, and the trawlers saw no more of her."

The trawler's prime importance to the cause of the patrol in the last two years of the war was her ability to keep the sea. The motor boats, yachts, and the like did splendidly in making the coastal waters too hot for the U-boat, but as the latter expanded in size and power into an ocean-cruising submersible, playing the highwayman far out on the transatlantic lanes, a more seaworthy type of vessel was demanded. Experience proved that there were just two kinds that could serve the purpose, the destroyer and the trawler. The former, of course, was designed to weather anything and to make, if need be, long cruises. The latter, though only a fishing craft, was strong and seaworthy, capable of carrying a goodly number in her crew, and of stowing enough food to keep at sea for a fortnight at least. She was not fast, ten knots was her measure, but she carried a very respectable gun for submarines, and her draft was so light that she had small need to fear a torpedo. Even when the periscope is not breaking the surface, a submarine leaves a telltale trail of bubbles, which the trained eye can recognize when the weather is not rough. So useful did these fisher boats prove as auxiliary men of war that by the end of the conflict 2,300 of them were enlisted in the hunt for submarines round the British Isles.

There was little glory in the trawler service and much hardship and peril, but these fishermen who kept their hard four years' patrol proved themselves no less worthy of England's gratitude than the bluejackets of her fleet.



Photo by Hunter.

On Patrol Duty in the Submarine Zone

A British destroyer is stationed past the nets outside of Harwich, ready to answer a signal to hunt down an undersea boat.

VI

THE "Q" SHIPS

WHEN the German High Command decided to take a short cut to victory by means of unrestricted submarine warfare and proceeded to their massacre of seamen and passengers, it occurred to somebody that it would be worth while to try to catch some of these pirates by means of a merchantman decoy. It had been a frequent device of U-boat commanders to proceed on the surface with the upper works and rigging of a sailing ship or schooner attached to the submarine's deck to deceive the patrols of sea and sky. The plan was now tried of setting a ship cruising in the U-boat's hunting ground, helpless to the eye, but actually heavily armed. The product was known popularly as the "Q" boat or "Q" ship, though as long as it was effective the secret of its existence was carefully hidden. It was only after the German had become fully acquainted with the type that the curtain of secrecy was lifted.

"Bartimeus," the writer of delightful Navy stories, gave to the *London Times* an interesting account of the origin and the work of this mysterious submarine-killer, whose daring commander, Gordon Campbell, was awarded the Victoria Cross. He says:

"The methods of the German submarine in its war against unarmed shipping gradually settled down to a routine which varied but little in the early phases of the conflict. It was the custom to attempt to torpedo at sight, on the principle of the least said the soonest mended. If the torpedo missed, as was not infrequently the case, the submarine broke surface a mile or so away from the ship and fired a shot across her bows. The merchantman had then two alternatives: to take to his heels and try to escape, or to heave to and abandon ship. In the latter case the submarine closed the derelict to within a few hundred yards and summoned the boats alongside. At the muzzle of a revolver the captain was ordered into the submarine with his papers and the crew of his boat directed to row a party of German sailors, bearing bombs, back to the ship.

"These worthies, having placed the bombs in the ship's vitals and looted the officers' quarters, returned to the submarine, propelled by the men they had robbed and whose ship they

were engaged in sinking. From the German point of view the situation was not without its humor, and in the majority of cases these merry Teutons saw fit, by jeers, to share the jest with the castaways before abandoning them to their fate in open boats. In due course, the bomb exploded and the ship disappeared. It is an economical method, since bombs cost less than torpedoes, and the formality of looting the ship helped to preserve its popularity.

"For a while the Navy noted these methods and the little human failings of the enemy in silence. Then it drew a deep breath and opined that thereby it had pleased the Lord to deliver the enemy into its hands. In its own peculiar phraseology, it reckoned that it 'had the Hun cold.'

JUST A TRAMP STEAMER

"It argued that a man-of-war could be disguised as a tramp steamer and carry concealed armament. Such a vessel, by plying on the trade routes, must inevitably meet a submarine in time, and in her character of peaceful merchantman be ordered to abandon ship. The ship might be abandoned to all outward appearances, but still retain sufficient men concealed on board to fight the hidden guns when the moment came for her to cast disguise to the winds and hoist the White Ensign. Certain risks had to be taken for granted, of course; the almost inevitable torpedo sooner or later, the probability of a little indiscriminate shelling while the submarine approached, the possibility of being ultimately sunk before assistance could arrive. Yet the odds were on the submarine being sunk first, and the rest was on the knees of the gods. Thus the Navy argued.

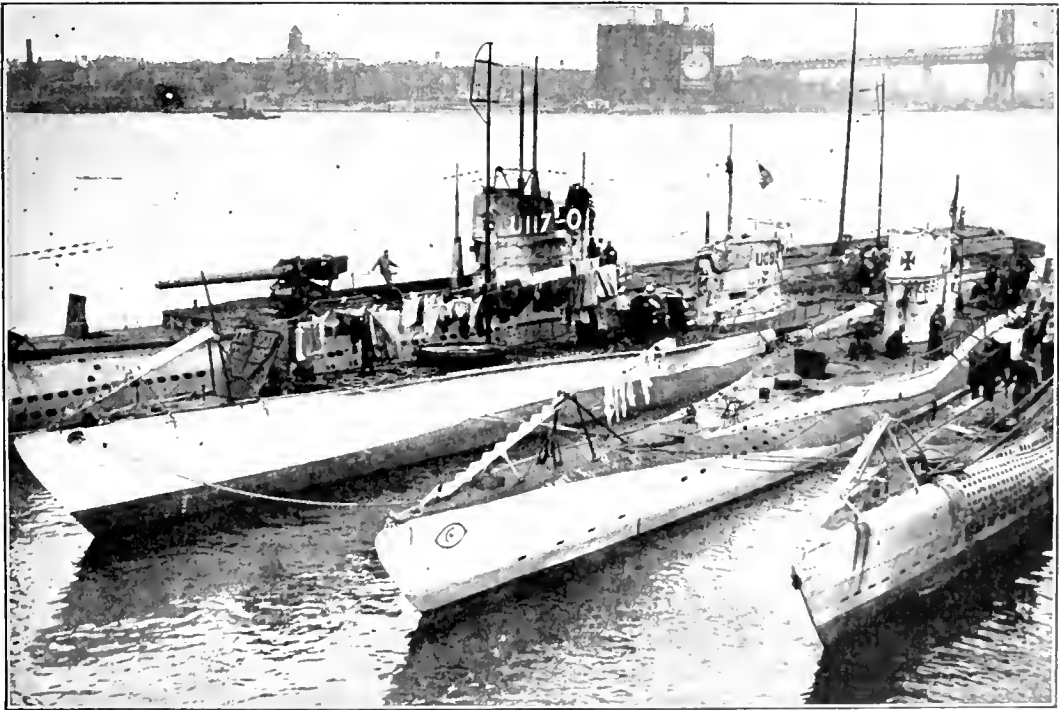
"An old collier of some 2,000 tons was selected from among the shipping at the disposal of the Admiralty and taken to a dockyard port, where she unostentatiously underwent certain structural alterations. These included disappearing mountings for guns concealed beneath hatchway covers, and masked by deckhouses which collapsed like cards at a jerk of a lever. From the host of volunteers, among whom were retired admirals, captains, commanders, and lieutenants of the Royal Navy, a young lieutenant-commander was selected and appointed in command. His officers were volunteers from the Royal Naval Reserve, ex-merchant seamen, familiar enough with the rôle they were required to play, and in some cases with little mental scores of their own which required adjustment when the time came. The crew was mostly from the West Country, men of Devon with one or two traditions to uphold

in the matter of brave adventure. It also included Welshmen and Irish with a pretty taste for a fight, and a few Scots, of the dour type, hard to frighten. They were picked from the Royal Navy, Fleet, and Royal Reserves—merchant seamen and fishermen the last, many of whom had formed a nodding acquaintance with death long before they received this invitation to a closer intimacy. In the matter of ages, they ranged between 17 and 52.

"They sailed from Queenstown under the Red

"Early one spring morning when the daylight was stealing out of gray skies across the Atlantic waste, the track of a torpedo bubbled across the bows and passed ahead of the ship. The moment for which they had waited five weary months had come.

"As befitted her rôle of tramp steamer in the early days of the war, the ship held steadily on her way, observing the stars in their courses, but not otherwise interested in the universe. Inboard, however, the alarm rang along the



Underwood and Underwood

Captured German Submarines at the Brooklyn Navy Yard

Ensign; but before they left some of the crew trudged, as pilgrims to a shrine, and stood awhile among the mounds in that pathetic God's acre where the women and children of the *Lusitania* rest. They were then but freshly turned, those mounds in their eloquent diversity of lengths, and men had not begun to forget. . . .

A SUBMARINE APPROACHES

"For five weary months they patrolled the Atlantic waiting for the chance to avenge the *Lusitania's* dead. And often—so successful was their camouflage—they deceived even their own cruisers. Finally the long desired opportunity came:

mess-decks and saloons, and men crawled into hen-coops and deck-houses, eagerly finging the pistol-grips of the hidden guns. A few minutes later the submarine broke surface half a mile astern of the ship, and fired a shot across her bows. Whereupon, the supposed collier stopped her engine, and lay rolling in the trough of the seas with steam pouring from her exhausts, while the crew, who had rehearsed this moment to a perfection never yet realized on the boards of legitimate drama, rushed to and fro with every semblance of panic. The captain danced from one end of the bridge to the other, waving his arms and shouting; boats were turned out and in again amid a deliberate confusion that brought blushes to the

cheeks of the ex-merchant seamen called upon to play the part.

THEN THE GUNS OPENED UP

"In the meantime the submarine had approached at full speed to within about 700 yards, and, evidently not satisfied with the speed at which the ship was being abandoned, fired another shot, which pitched 50 yards short of the engine-room. There was apparently nothing further to be gained by prolonging the performance for this impatient audience, and the lieutenant-commander on the bridge, cap in hand, and breathless with his pantomimic exertions, blew a shrill blast on his whistle. Simultaneously the White Ensign fluttered to the masthead, deck-houses and screens clattered down, and three minutes later the submarine sank under a rain of shells and Maxim bullets. As she disappeared beneath the surface the avenger reached the spot and dropped a depth charge over her. A moment after the explosion the submarine reappeared in a perpendicular position alongside the ship, denting the bilge-keel as she rolled drunkenly among the waves. The after gun put five more rounds into the shattered hull at point-blank range, and, as she sank for the last time, two more depth charges were dropped in mercy to speed her passing.

"The lieutenant-commander in command had personally been superintending the administering of the *coup de grâce* from the stern, and, as he turned to make his way forward to the bridge for a few brief moments, the bonds of naval discipline relaxed. His men surged round him in a wildly cheering throng, struggling to be the first to wring him by the hand. They then mustered in the saloon, standing bareheaded while their captain read the Prayers of Thanksgiving for Victory, and called for three cheers for his Majesty the King. They cheered as only men can cheer in the first exultant flush of victory. But as the vessel gathered way and resumed her grim quest each man realized, deep down in his heart, that far sterner ordeals lay ahead. . . .

THE NEXT GERMAN "SUB" MORE CAUTIOUS

"Because man is mortal, not infallible, and fortune at her brightest a fickle jade, it was inevitable that sooner or later a day must come when a crippled German submarine would submerge beneath a hail of shells, miraculously succeed in patching up her damaged hull, and, under cover of darkness, crawl back to port. Word would then go out from Wilhelmshaven of a British man-of-war disguised as a lum-

bering tramp, with such and such a marking on her funnel, with stumpy masts and rusty deckhouses, who carried guns concealed in wheel-house and hen-coops, whose bulwarks collapsed, and whose bridge screens masked quick-firers and desperate men. To approach such a vessel was to enter a death-trap, unless every precaution was first taken to ensure she had been abandoned. There would be only one precaution open to a German submarine, who might in due course be expected to act accordingly. Such a day, in fact, came: misty, windless, with the aftermath of a great storm rolling eastward beneath a sullen swell. A vessel with the outward appearance of a merchantman, the fruits of whose labors for the past six months had doubtless perplexed that section of the Wilhelmshaven bureaucracy concerned with the non-return of U-boats, sighted toward evening the periscope and conning-tower of a submarine a mile away on her beam.

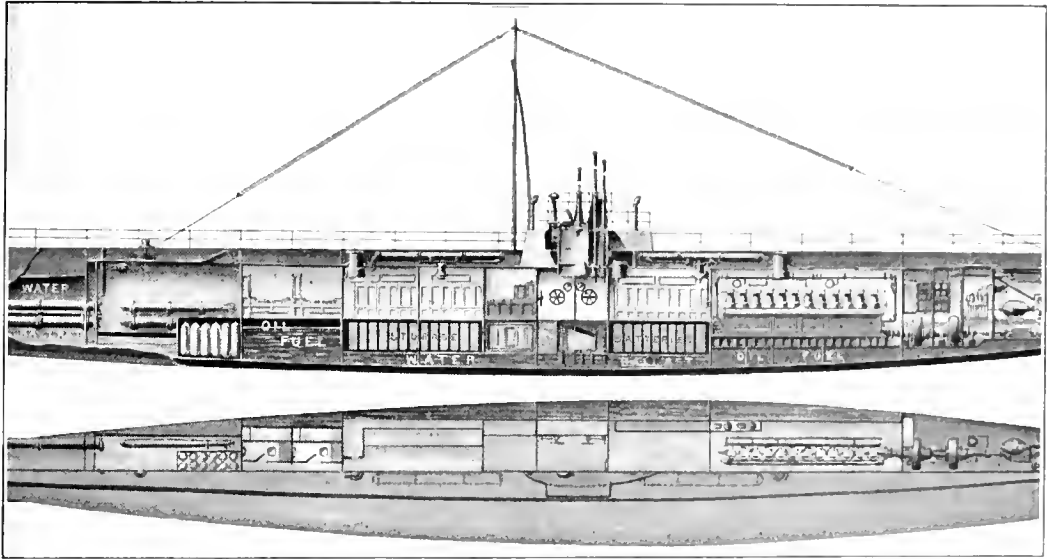
"The figure on the bridge, of the tramp, who carried, among other papers in his charge, his commission as a commander of the Royal Navy, took his pipe out of his mouth and laughed, as Drake might have laughed when the sails of a Spanish galleon broke the horizon. A tangle of flags appeared at the periscope of the submarine, and the tramp stopped obediently, blowing off steam in great clouds. Her commander turned over the pages of the International Signal Code, smiling still. 'Hoist: "Can not understand your signal,"' he said to the signalman, 'I want to waste a few minutes,' and moved to the engine-room voice-pipe. Obedient to his directions, the screws furtively jogged ahead under cover of the escaping steam, edging the steamer toward the watching enemy. The latter, however, promptly manned her foremost gun, turned, and slowly steamed toward them; she opened fire at a range of half a mile, the shell passing over the funnel of the disguised man-of-war.

"In the tense excitement of that moment, when men's nerves and faculties were stretched like banjo-strings, the report of the submarine's gun rang loud through the still air. One of the man-of-war's gun-layers, lying concealed within his collapsible deck-house, heard the report, and, thinking that the ship herself had opened fire without the customary warning gongs, flung down the screens which masked his weapon. Any further attempt at concealment was useless. The fire-gongs rang furiously at every gun position, the White Ensign was triced up to the mast-head in the twinkling of an eye, and the action started. After the first few hits the submarine lay motionless, with her bows

submerged and her stern in the air for upwards of five minutes, while shells burst all about her. The heavy swell made shooting difficult, but eventually she sank in a great commotion of the water and dense clouds of vapor that hung over the surface for some minutes. Two depth charges were dropped over her, and if ever men had cause for modest self-congratulation on having riddled the seas of yet another scourge it would seem that the officers and crew of the King's ship might have laid claim to their share. Yet, by ways unknown and incredible, it was claimed by the enemy that the submarine con-

ed, it became part of this grim game of bluff for the victim to insure that she was hit. Then, when the 'panic party' had abandoned the ship, it behove the remainder to wait concealed and unresponsive beside their hidden guns, while the submarine rose to the surface and either closed within range, or shelled them with sufficient thoroughness to convince him that the limit of human courage had been reached; that there could be no one concealed on board, and that he might with safety approach to loot and burn.

"Now this, as Mr. Kipling would put it, 'was a damned tough bullet to chew.' They



© Scientific American.

A 1000-Ton American Submarine

This submarine differs from the German U-boats in that it is not a submersible. The German U-boats are provided with a ship-like hull. This hull encloses a cigar-shaped body. A true submarine consists of the cigar-shaped body only.

trived to return, with shot-holes plugged and her dishonored colors at half-mast, to tell the tale."

Thus the secret of the "Q" boat had been revealed to the enemy, but this fact did not put an end to its usefulness. A perilous game of bluff might still be played. The writer continues:

A NEW RUSE THAT WORKED

"Future success in operations of this nature, therefore, depended no longer upon a mere ruse. It was obvious that thenceforward the enemy would not rise to the surface until his torpedo had found its mark; hence, although a torpedo seen approaching can not infrequently be avoid-

were no demigods, nor yet fanatics, these three score or so wind-tanned sailor-men. They were just ordinary human beings, with the average man's partiality for life and a whole skin, and the love of wife and bairn or sweetheart plucking at the heart-strings of most of them. But they shared what is not given to all men in this world of human frailty, a whole-souled confidence in a fellow man, which, strengthened by utter devotion, would have carried them at his lightest nod through the gates of hell.

"Under his command, then, they sailed with a cargo of timber in each hold and a faith in the good providence of God that came very near to the faith of little children. In due course, about 9:45 one morning a torpedo was seen approaching the starboard beam; observing his

rôle as master of a careless tramp, with poor look-outs, the young commander held on his course. At the last moment, however, the helm was imperceptibly altered to insure the ship being struck abaft the engine-room, where it might do least damage. Those whom fate has afforded the opportunity of studying the trail of an approaching torpedo will, if they recall their sensations, appreciate to some extent the iron nerve requisite to such a maneuver. The torpedo burst abreast No. 3 hold, hurling a wall of water and wreckage to the height of the mast, and blowing a hole in the ship's side forty feet wide. Half-stunned and deafened by the concussion, the commander raised himself on his hands and knees, where he had been flung, and shouted to the navigator, 'They've got us this time.' The navigator, who was inside the chart-house, thrust his head out for a moment, moistening a lead pencil with his lips. 'I reckon I've got time to finish working out this sight, sir,' he replied with a grin, and withdrew his head.

THE "PANIC PARTY" TAKE TO THE BOATS

"The alarm-gongs had already sent the guns' crews to their invisible guns, and immediately after the explosion 'Panic stations' was ordered, followed in due course by 'Abandon ship.' The navigator, having finished his 'sight,' and now acting as 'master,' abandoned ship with the 'panic party.' No sooner had the boats been lowered and shoved off from the ship's side, however, than the chief engineer rang up from below and reported that the after hulkhead had gone and that the engine-room was filling fast. Peering, on all fours, through a slit in the bridge-screen, waiting for the inevitable periscope to appear, the commander bade him hold on as long as he could and keep enough steam to work the pumps; when the water had extinguished the fires, and then only, the engines were abandoned and the staff remained concealed. This they did, crawling eventually on to the cylinders to escape from the rising flood. . . .

"Shortly after the torpedo struck the ship the periscope of a submarine broke the surface a couple of hundred yards distant, evidently watching proceedings with a deliberate, cautious scrutiny. Moving slowly through the water, like the fin of a waiting shark, the sinister object came gradually down the ship's side, within five yards of the breathless boats, and not ten yards from where the commander lay, his pipe between his teeth, beside the voice-pipes that connected him with the assistant paymaster,

R. N. R., who, concealed in the gun-control position, was awaiting the order to open fire. From the altitude of the bridge, the submerged whaleback hull was plainly visible to the figure crouched behind the bridge-screens, and the temptation to yield to the impulse of the moment, to open fire and end the suspense, shook even his iron nerves. A lucky shot might pierce the lead-gray shadow that moved fifteen feet beneath the surface; but water plays strange tricks with projectiles, deflecting them at unexpected ricochets, at angles no man can foretell; moreover, the submarine was in diving trim. The odds against a broadside overwhelming her before she could plunge into the depths and escape were too great. So the commander waited, with self-control that was almost superhuman, and, prone beside their guns unseeing and unseen, his men waited, too, with teeth clinched and sprawling limbs rigid in the mastery of discipline.

"The ship had then sunk by the stern until it was awash, and the crew of the gun, masked by the wheelhouse, were crouched up to their knees in water. A black cat, the ship's mascot, that had been blown overboard by the explosion of the torpedo, swam aft and in over the stern, whose counter rose normally twenty feet above the surface. Still the periscope continued its unhurried observation; it traveled past the ship, across the bow, and then slowly moved away, as if content that the task was done. For the space of nearly a minute bitter disappointment and mortification rose and swelled to bursting-point in the commander's heart. His ship had been torpedoed, and was sinking. Their quarry had all but been within their grasp, and was now going to escape unscathed. Then, when hope was flickering to extinction, the submarine rose to the surface three hundred yards on the port bow, and came slowly back toward the ship.

"Up to this juncture, although the ship was settling deeper every moment, the commander had purposely refrained from summoning assistance by wireless, lest interruption should come before his grim work was done. Now, however, he saw at one quick glance that the Lord had indeed 'placed the enemy upon his lee bow,' and the rest was only a matter of a few bloody moments. Accordingly he gave orders for an urgent wireless signal to be sent out forthwith summoning assistance, and waited until the submarine was on a line when all his guns would bear. She reached the desired spot at the moment when the German commander was complacently emerging from the conning-tower; up went the White Ensign, and the first

shot beheaded him; he dropped back into the interior of the submarine, and his wholly unexpected reappearance imparted a shock of surprise to the remainder of the inmates from which they never recovered. The submarine lay motionless as a dead whale, while the avenging broadside shattered the hull, and the grizzled pensioner inside a hen-coop scientifically raked her deck with a Maxim to prevent her gun from being manned. She finally sank with her conning-tower open and the crew pouring, shrieking, out of the hatchway.

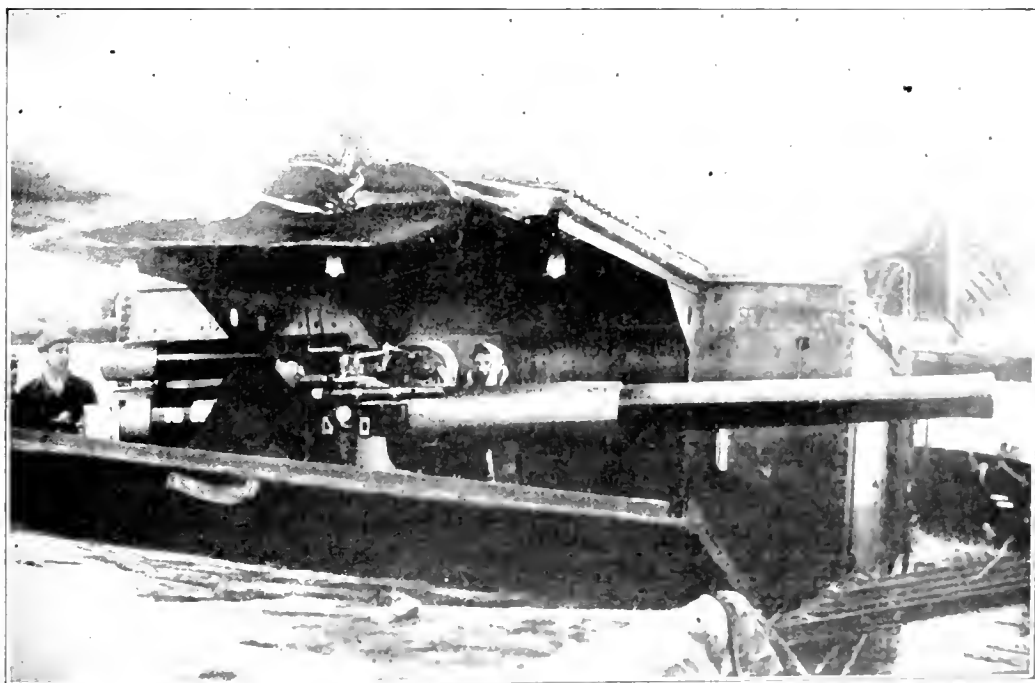
"From the swirling vortex of oil and blood and air-bubbles in which the majority vanished two dazed prisoners were rescued by the exultant 'panic party' in the boats, and brought back to the ship. Once on board, however, the imperious necessities of the moment overwhelmed even the elation of victory. Bulkheads were shored in all compartments still accessible, confidential documents destroyed in anticipation of the worst, and then all but the commander and a handful of men took to the boats and awaited succor. It came at noon in the guise of a congratulatory and businesslike destroyer, and was augmented later by a couple of sloops. By 5

p. m. the water had ceased to gain and the ship was in tow heading for port; there she arrived and was safely beached after dark the following day."

A 200-TON "Q" SCHOONER

The foregoing story relates the adventures of the first of the "Q" boats, but there were other ships and men who carried on in this game with the same reckless disregard of danger and the same success. Not all of these decoys, however, were steamships. One of them, which also distinguished herself and won the V. C. for her commander, was only a 200-ton schooner. Her story is thus related by the official dispatch:

"Lieut. William Edward Sanders, R. N. R., was awarded the Cross for an action of H. M. S. *Prize* on April 30th last [1918]. The *Prize*, a topsail schooner of 200 tons, sighted an enemy submarine, which opened fire at three miles' range and approached slowly astern. The 'panic party,' in charge of Skipper William Henry Brewer, R. N. R. (Trawler Section), imme-



© Undersea Force, Undersea Force

The Suffolk Coast, One of Great Britain's "Mystery Ships."

British men-of-war disguised as lumbering tramp steamers, with stumpy masts and rusty deck-houses, which carried guns concealed in the wheel house and hen-coops and whose bulwarks collapsed, played havoc with German submarines during the last two years of the World War.

diately abandoned ship. The ship's head was put into the wind, and the guns' crews concealed themselves by lying face downwards on the deck.

"The enemy continued deliberately shelling the schooner, inflicting severe damage and wounding a number of men. For 20 minutes she continued to approach, firing as she came, but at length, apparently satisfied that no one remained on board, she drew out on the schooner's quarter seventy yards away. The White Ensign was immediately hoisted, the screens dropped, and all guns opened fire. A shell struck the foremost gun of the submarine, blowing it to atoms and annihilating the crew. Another shot demolished the conning-tower, and at the same time a Lewis gun raked the survivors off the submarine's deck. She sank four minutes after the commencement of the action in clouds of smoke, the glare of an internal fire being visible through the rents in her hull.

"The captain of the submarine, a warrant officer, and one man were picked up and brought on board the *Prize*, which was then herself sinking fast. Captors and prisoners, however, succeeded in plugging the shot-holes and keeping the water under with the pumps. The *Prize* then set sail for the land, 120 miles distant. She was finally picked up two days later by a motor launch and towed the remaining five miles into harbor."

It is perhaps unnecessary to comment on the nerve of the men lying on the deck of this little schooner, while she deliberately offered herself as a target to the 4- and 5-inch guns of the submarine.

HOW A "Q" BOAT IS DISGUISED

These narratives of the prowess of the "Q" boats make clear in general the tactics employed to trap the submarine. These may be supplemented by details published in the *Scientific American*:

"The favorite method of concealment was to mount the guns in false deck-houses or beneath false hatches, the sides, ends, and ceiling of which were hinged and connected with mechanism which enabled them in a few seconds to be dropped or folded back, exposing the concealed gun and gun crew with their weapons trained directly upon the U-boat.

"To enable the commander to keep an eye on the U-boat, a periscope disguised as the chimney of a stove was emplaced in a position where it commanded an all-round view. The conning-

tower had the appearance of a large coil of rope, while another pile of heavy rope served to hide the connections for the auxiliary wireless aerials. Such officers and members of the crew as must needs put in an appearance on the ship, were dressed as civilians, the designer of the *Suffolk Coast*, Lieutenant-Commander Auten, V. C., wearing an ordinary sack suit and a soft fedora hat.

"The strategy and tactics (if we may use the term here) of these remarkable craft were as follows:

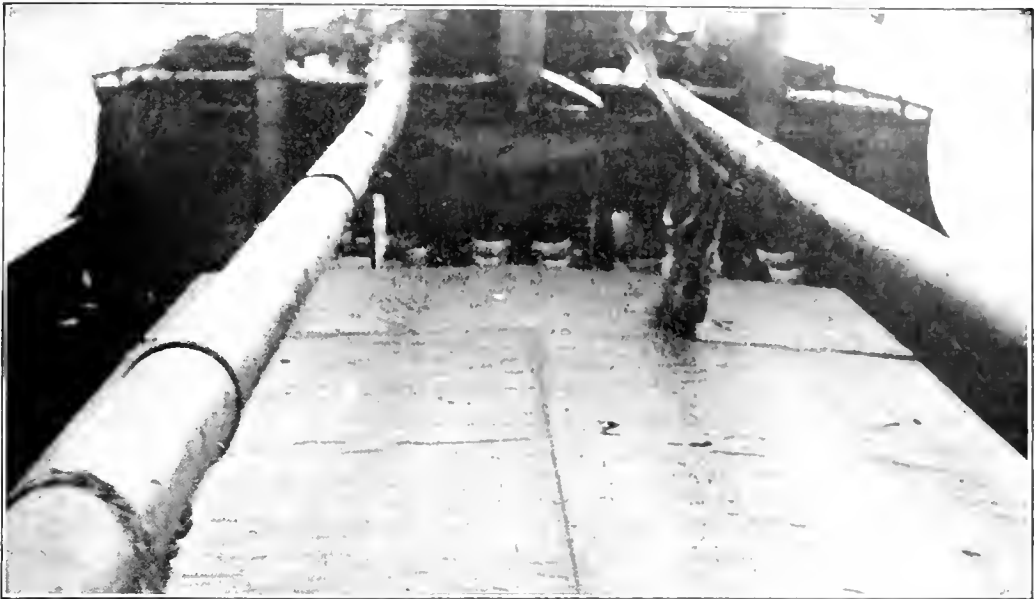
"The vessel (tramp or steamer, as the case might be) made for some waters where submarines had recently been reported, or where they were wont to foregather, and steamed or sailed along as though she were on a peaceful merchant voyage. When the submarine was sighted, she made every apparent effort to get away, though as a matter of fact, the vessel would be slowed up gradually so as to bring the submarine within range as soon as possible. In some cases she would carry an after gun, either real or dummy, such as was mounted on merchant ships, and would even engage in an exchange of shots. The crew of the ship was divided between the actual fighting crew who remained carefully concealed, and what was called the 'panic party,' who, when the vessel was heavily shelled or had been struck by a torpedo, would make a rush for the boats and pull away from the ship. When the submarine had come up within point-blank range, the false hatches, tarpaulins, and other camouflage would be flung open and the guns would open up at a range so close that the destruction of the U-boat was certain."

THE DUMMY DREADNOUGHTS

The "Q" ships were not the only ones sent forth to fool the Hun. Another type that served its purpose in the time of need was the dummy battleship. Of course a pure *ruse de guerre* could not have a very long life, but this one lasted long enough to give the Germans some hard knocks.

The dummy ship was a species of naval camouflage, the most elaborate and ingenious ever attempted. Ordinary steamers were so transformed by means of wood and canvas as to reproduce the well-known outlines of the British dreadnoughts. All the appurtenances of tripod mast, turret, and big gun were imitated with remarkable fidelity.

By means of these dummies it is said that the Germans were deceived as to the where-



Underwood and Underwood.

Another View of the *Suffolk* Coast

Under the hatches lies a "go-to-sleep" 12 pounder; a pull on a lever brings the gun into play.

abouts of the battle-cruiser squadron at the time of their last raid on the east coast of England, with the consequence that they were caught by Beatty in the action off Dogger Bank. There were occasions, too, when the exigencies of overhauling and repair, combined with the actual losses by mine and torpedo, had reduced the Grand Fleet to a margin perilously close to inferiority to the German High Seas Fleet, and it was most useful to have these dummy dreadnoughts patrolling the sea while their originals were hauled up in the docks.

For reasons of deceiving the enemy, apparently, some of these pretended battleships appeared in the operations off the Dardanelles. Perhaps it was here that their true character was revealed. At any rate it is said that one of them came in too close to the shore batteries and got hit squarely. Then the Turkish gunners stared agape at the miracle, for turret and 14-inch guns were seen to float lightly on the surface of the *Ægean*!

THE "HUSH" SHIPS

The last of the novel types of warship evolved by the war is the "Hush" ship—popularly so-called because of the dark secrecy

that shrouded them from the time they were conceived till the great surrender at the close of the war. These giant destroyers, or super-scout cruisers—whatever they may yet be called—never met the test of actual fighting, but they are the embodiment of an idea already discussed by officers of the American Navy before the war; that is, a big vessel with big guns, but without armor, built wholly for speed. It is possible that this type of ship may yet be as revolutionary for the cruiser as the original Dreadnought of 1905 proved to be for the battleship.

"The idea underlying their design was to provide a vessel of such size and speed that it would be capable of overtaking any vessels of any kind whatsoever, even the fastest destroyers with speeds of 35 to 36 knots, and sinking them. In their proportions of length to beam and draft, they are practically vastly enlarged destroyers, the ratio of beam to length being about that of the destroyers, or, say, one to ten or one to eleven; also, their draft is very much less than that of a battle-cruiser or battleship. Moreover, like the destroyers, their entrance, run, and after body are exceedingly fine. They have the same characteristic lofty bow, with reduced freeboard throughout the after part of

the ship. Like the destroyers, they are devoid of armor. They are driven by geared turbine engines, and although, for their length, the displacement is far less than that of a battle-cruiser, the horse-power must be approximately the same, if not greater, for we are reliably informed that they are capable of making and maintaining a sea speed of 40 knots. That they can make this speed and sustain it is suggested by the fact that when, following our entrance into the war, and French and British missions were immediately dispatched to the United States for consultation with our government, one of these ships was selected to carry the British mission, including Sir Arthur Balfour, across the Atlantic, and made the trip, we learn from reliable authority, in three days' time.

"Another remarkable feature is the main battery, which consists of only two 15-inch guns mounted in single turrets, one forward on the fo'c'sle deck, the other aft on the main deck.

"There was always the possibility that one of the 28-knot German battle-cruisers or some of the fast German scouts might make a dash out of the North Sea, by night or in foggy weather, and prey upon Allied shipping. The cruise of the *Emden* and other German raiders proved that it was possible for a raiding ship to maintain itself on the high seas by supplying itself with coal and provisions from captured enemy vessels. It can readily be understood that, if the Germans had possessed the initiative and the courage to make such a break into the open (which we now know they did not possess), an armored cruiser or a group of 30-knot scouts could have created frightful havoc among Allied shipping, and it would have been very difficult to run down and capture them. These special ships, however, with their great size and sea-keeping qualities, and their high speed, would have been admirably qualified for meeting and defeating any such raiding enterprise on the part of the Germans before it had gone very far.

"Subsequently, two of these ships were converted into mother ships for seaplanes, of which they were capable of carrying a large number. The changes involved the removal of the after gun and the construction of a long runway or launching platform extending from the bridge aft. The structure was built of steel, the vertical columns upon which it was carried being placed inboard far enough to permit the operation of the secondary battery.

"These platforms were structures of great width and length, and involved, of course, the addition of a large amount of weight; but if the guns were of the size stated above, the re-

moval of the after 15-inch gun and its turret, mounting, and ammunition supply would probably compensate for the weight of the platform.

"The length of these ships on the waterline is 840 feet. At a ratio of 10 to 1, the beam would be about 85 feet."

VII

ANTI-SUBMARINE DEVICES

A LARGE proportion of the naval developments in sea and sky that have been discussed owed their origin to the menace of the submarine. They are all a part of the great effort to meet the challenge hurled at surface sea power by this new weapon that operated beneath the surface. There remains a word to be said for the special devices and weapons produced by the same emergency.

It is a curious fact that although the submarine had reached a high state of development by 1914, nothing of any value had been done to invent a means of protection against it. For many years it had been obvious that the British Navy would be more likely to fight the German than any other in the world, and the experts all admitted that the submarine and the sea mine were weapons that would give the naval power on the defensive an enormous advantage never before possessed. Nevertheless the British Admiralty entered the war without a single naval base on the east coast, without any system of coast defense whatever, and no idea what to do about submarines, except the use of destroyers to screen capital ships. It is true that British ships still had booms alongside, from which torpedo nets were swung out when they lay at anchor. The American Navy put no faith in this device—which, therefore, did not appear on American men-of-war—and the test of war proved it useless.

It was the sinking of the *Aboukir*, *Hogue*, and *Cressy* in September, 1914, that awoke England to the need of finding an answer to the U-boat, and when ruthless submarine warfare began it became a question of life and death, as for instance, in one black week of April, 1917, when forty steamers were sent to the bottom.

As noted already, the destroyer came nearest

to being the antidote for the submarine. But although no magic weapon was invented to kill submarines, a number of devices and certain tactics proved useful, and the sum total of all of these finally beat the submarine.

In the early months of the war the offensive tactics against the submarine were based on the ram, the net, the gun, and the torpedo. Later came the depth charge. The first U-boat victim of the war, the *U-15*, was taken on August 10, 1914, by the light cruiser *Birmingham*, which, by a pretty bit of shooting, smashed the periscope and forced the helpless vessel to the surface. Several were sunk or captured by ramming, both by men-of-war and by patrols. For example, the famous Otto Weddigen's boat, the *U-29*, was rammed and sunk by the battleship *Dreadnought* in March, 1915.

GERMAN "SUB" TRAPPED IN A NET—THEN ESCAPES

Another method was trapping by nets. Destroyers in pairs dragged between them strips of wire netting 170 feet in length and 27 feet deep, with wooden floats attached. The idea was to sight a submarine and then to drop the net across its course. The net would sink to the proper depth and, if the submarine ran into it, would catch it like a fish. An experience with one of these nets was recounted by a German U-boat commander, in January, 1916, to a Hungarian correspondent, and later the story was published in the *London Times*. It runs as follows:

"I looked through the periscope (he continued) and could see a red buoy behind my boat. When, ten minutes later, I looked I saw the buoy again, still at the same distance behind us. I steered to the right and then to the left, but the buoy kept on following us. I descended deep into the water, but still saw the buoy floating on the surface above us. At last I discovered that we had caught the chain of the buoy and that we were dragging it along with us. At this time I also saw through the periscope a strange, small steamer, which, at a considerable distance, was steering a course directly behind us and the buoy. At the same time my sounding apparatus indicated that a screw steamer was in the vicinity. Observation soon revealed the fact that five enemy torpedo-boats

were approaching from the north. I increased the speed of the boat, in the expectation of being able to attack one of them. The five torpedo-boats arranged themselves in a semicircle. I sank still deeper, and by pumping obtained better air. I got ready for all eventualities. At this juncture my boat began to roll in a most incomprehensible manner. We began to rise and sink, the steering gear being apparently out of order. Soon after, however, I found that this was not the case, and that we had a still



Otto Weddigen

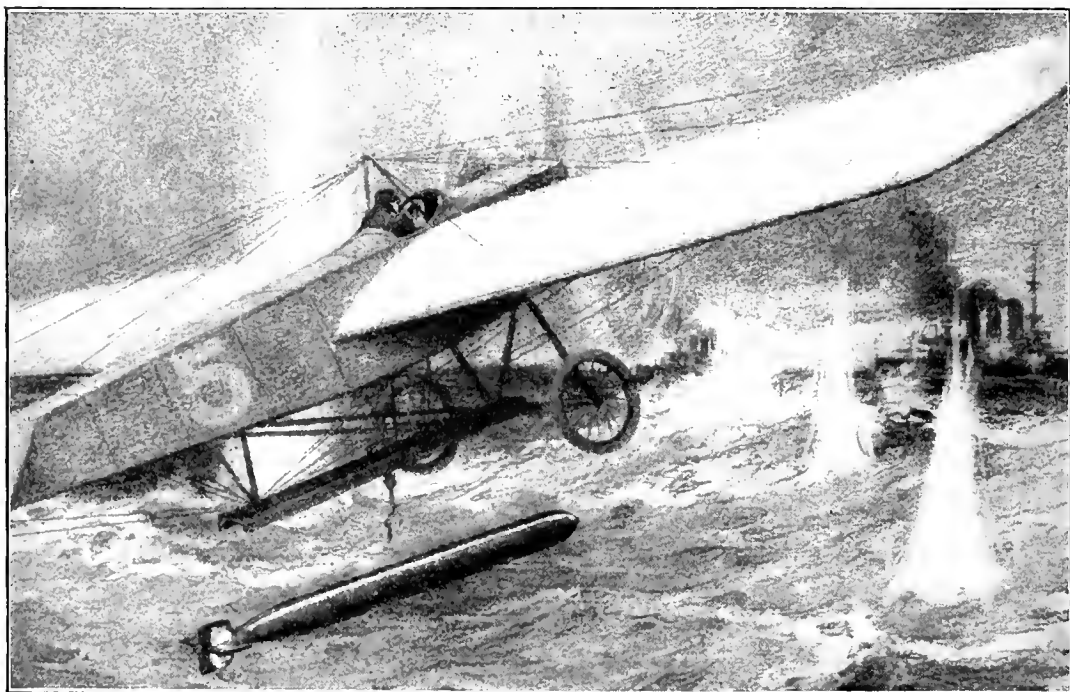
Commander of the *U-9*, which torpedoed three British cruisers on September 22, 1914. He was later in command of the *U-29*.

more serious position to face. I discovered that we had encountered a wire netting, and that we were entangled in it in an almost hopeless manner. We had, in fact, got into the net of one of the hunters surrounding us. For an hour and a half the netting carried us with it, and although I made every effort to get clear of it, rising and then sinking with the object of getting to the bottom of the netting, it was all in vain, for we were always dragged back, sometimes to the right and sometimes to the left.

"There was nothing else for me to do but to

increase the weight in the submarine as much as possible, so that I might try to tear the netting. Fortunately when we started I had pumped in from five to six tons of water, filling all the tanks. I increased the weight of the boat to the utmost, and suddenly we felt a shock and were clear of the netting. I then descended as deeply in the water as I could, the manometer showing 15 fathoms. We remained under the water for eighteen hours. When I wanted to ascertain where we were I noticed that my

but the rudder did not work. In consequence I had to sink again to the bottom of the sea, where I remained for six hours, at the end of which time I had succeeded in putting the compass in order and also in repairing the steering gear. Once more I rose in the water until I could see through the periscope. A torpedo-boat, however, detected me at once, and made straight for me. At this time the position was that on the right, at a distance of about a mile and a half, the torpedo-boats were in line up,



© Scientific American.

The Torpedoplane

Above is depicted a combination of airplane and torpedo, called the torpedoplane. The idea was first worked out by Rear Admiral Fiske, U. S. N. Late in the war the British and Germans introduced torpedoplanes, and used them with good results. The British torpedoplane carried two torpedoes, each weighing 1,000 pounds.

compass was out of order. For a time I steered by the green color of the water, but at last I had to get rid of ballast in order to rise. My manometer still, however, showed fifteen fathoms, and although I felt that we were rising it always showed the same depth. This instrument also, it was evident, was out of order. I had therefore to be very careful not to rise too high and thus attract the attention of the torpedo-boats. Slowly the periscope rose above the surface, and I could see the enemy in front of me, and towards the left the east coast of England. I tried to turn to starboard,

while on the left, at about the same distance, was the English coast. I immediately descended again to a depth of fifteen fathoms. I remained submerged for two hours, then slowly turned outwards, and at a distance of some fifty yards from the leading enemy craft passed towards the open sea. At nine o'clock in the evening we were able to rise to the surface in safety."

How many submarines were caught by this method is very doubtful. Certainly the practice was abandoned for more direct methods

of attack in the later stages of the war. Of course where a U-boat was hopelessly enmeshed by the net it would go to the bottom and seldom if ever be identified.

A more reliable weapon was the gun. At first, of course, merchantmen were helpless against submarine attack because they had no guns. First guns were served out to the regular auxiliaries, like the patrol flotilla, and then to the merchant ships for self-defense. As the crews gained experience in handling these, the gun became more and more useful in keeping the submarine submerged. The French patrol boat *Hollande*, for instance, at the range of nearly a mile, planted two shells on the deck of a submarine that was just swinging round to torpedo her, and that particular submarine never saw the surface again.

The torpedo had been vastly improved in power in effectiveness before the war began. It has had a tremendous value in fleet tactics—as witness the story of the German escape at the battle of Jutland—and is responsible for nine-tenths of the potency of the submarine. In action between submarines, therefore, torpedoes do the killing, as they have on several occasions in this war. Its usefulness in fighting submarines is extremely limited, however, because it is not available for any other type of vessel to use but the submarine itself. A destroyer, for example, would hit a U-boat much more quickly and surely by means of a shell gun than by a torpedo.

EVOLUTION OF THE DEPTH BOMB

The most deadly weapon of all was the depth bomb. The credit for its origin goes to some one—yet nameless—in the British Navy. This man conceived the idea of discharging some form of high explosive shell which would strike the submarine under water, and evolved a "submarine dart" for this purpose. This consisted of a shell containing 25 pounds of TNT attached to the end of a shaft which fitted the bore of a one-pounder gun. It was fired much as the rifle grenades were in trench warfare. On testing this contrivance the naval men discovered that the charge was far too small to harm a submarine under water, but they held to the principle and went ahead to devise something

heavier. The result was the depth bomb or depth charge.

The earlier ones were comparatively light, but they steadily increased in weight and, accordingly, in their radius of effectiveness. The 100-pound bomb grew to 200 pounds, then 250 and 300 pounds, and finally by the end of the war it had reached even 600 pounds. In this development of the depth charge the American Navy took an active part after our entry into the war, and the Naval Torpedo Station at Newport produced a type of hydrostatically operated bomb which, in the words of the Secretary's report, "was proven at least the equal of any other depth charge known to be in existence."

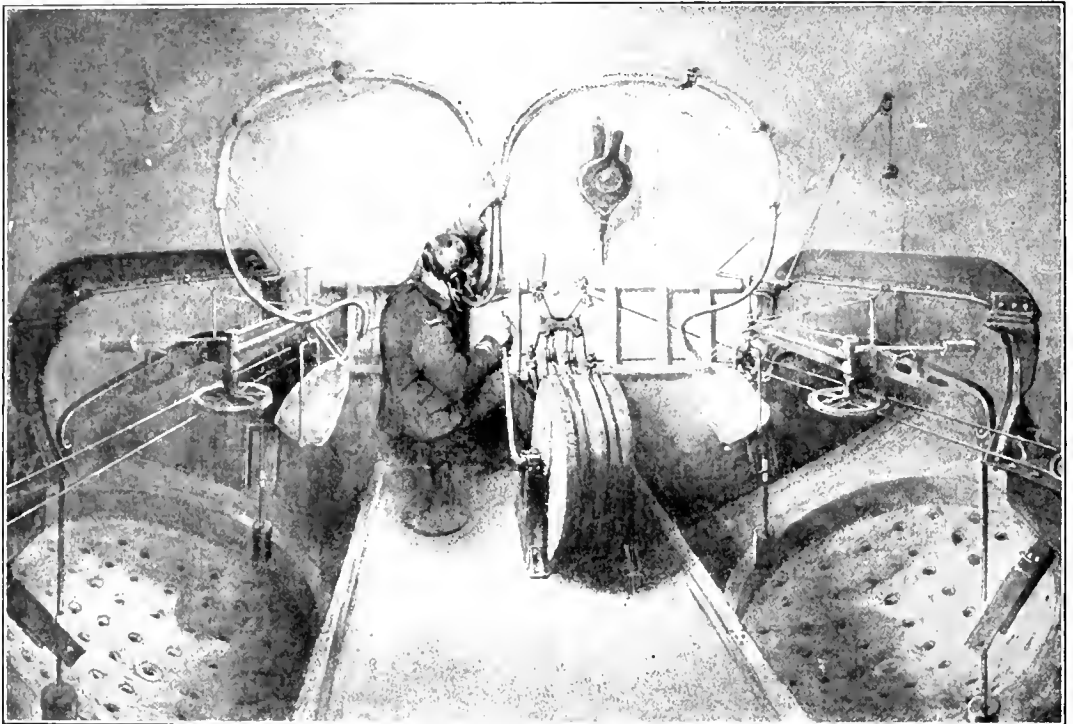
The great advantage of the modern depth charge is that it does not have to strike a submarine to destroy it. The earlier, small types were so light that their effectiveness depended on the ability of a submarine or trawler, as the case might be, to drop it squarely on the U-boat's hull. On account of the incompressibility of water, however, a heavy bomb needs only to explode near, and at a proper depth, to crush in the sides of a submarine like an egg shell. It is reckoned that with our latest 600-pound charges the explosion will wreck a submarine within a radius of 200 feet!

Destroyers and other patrol craft came more and more to depend on the depth bomb as a weapon against the submarine, for it proved the most successful. Indeed, so powerful is the explosion that the vessel dropping the charge must race away from the spot at full speed to avoid being wrecked or capsized by the upheaval of water on the surface. It was the combination of the destroyer's nimbleness and speed, with her cargo of depth bombs, that proved the most effective means of attack on the U-boat.

The defensive measures against the submarine included nets, listening devices, zigzag steaming, convoy, smoke screens, camouflage and mines. In the earlier months nets were used in an effort to shut off the Channel crossing. But these were difficult to keep in place on account of the swift tides and the choppy seas, and U-boats learned to penetrate them without much difficulty or danger. Other methods had to be substituted, chiefly mines and surface patrols, in order to keep that high-

ly important strip of water safe for transports. At night the patrolling craft, numbering 100 or more, burned flares so that any U-boat that attempted to get across on the surface might be sighted. Later nets came to be used in quieter waters, in entrances to harbors as a protection for the shipping anchored within. These were elaborately and stoutly built, developed with "gates" that were opened and

arated it from a hundred other sounds. The fact that water is a much better conductor of sound waves than the air had already been utilized before the war by the invention and use of the submarine bell by which ships warned each other of their presence in a fog; and in 1915 an American, William Dubilier, had devised a plan of defending harbors against submarines by utilizing the same prin-



Courtesy of Scientific American.

How U-Boats Were Discovered by Their Sound

Several systems of sound detection were worked out by the Allies in their campaign against the German U-boats. Here, for example, is the French system installed aboard a submarine, with an operator at work following the movements of a U-boat.

shut by patrols, and apparently served their purpose.

DUBILIER'S LISTENING DEVICE

Listening devices were employed for both offensive and defensive tactics. It was early realized that although the submarine was invisible under water it might yet be detected by the sound of her propellers if instruments could be invented that were sufficiently delicate both to catch the sound and also to sep-

ciple. His idea was to lower a number of microphones into the water, arranged in a semicircle curving outwards toward the sea, each microphone so placed as to be most sensitive to sound in a certain direction. Then by turning the switch from one to the other the listener could determine in what line of direction the submarine was coming.

As he himself described his invention in the *Popular Science Monthly*, what was most needed to perfect the conception was some kind of "sound sieve," that would pick up the

peculiar shrill hum of the electric motors when a submarine was running submerged. This was finally achieved by a little resonator, like a tiny organ pipe, tuned to this precise pitch. The sound was magnified by the microphone and thus by a transmitter transferred to the ear. By this means a submarine can be heard under water twenty miles away.

Mr. Dubilier thus explains the development of the idea:

"Suppose that a submarine gave forth a sound of some kind, would it not be possible to devise some form of apparatus by which it could be heard? That was the starting idea of the experiments that I conducted for the Allied Governments. It is not a new idea. Professor Tissot was hard at work with the original experiments and had already used microphones for this purpose. Professor Fessenden had made some brilliantly successful experiments with an apparatus of his invention, known as an 'oscillator,' which showed how easy it is to locate a steamship in a fog or at night, provided that it sent forth sound-waves. Tests of his instrument had also been made on submarines.

"But these investigations were all conducted with a device which was installed for the deliberate purpose of making a rhythmic noise to be detected. What was needed was some form of apparatus which would pick up the sounds sent forth by a submarine, not deliberately, but involuntarily.

"At once the beating of the propellers of a submarine suggests itself. It is not characteristic enough. Motor-boats, steamships, and other power-driven vessels have propellers, and although their period of vibration is different from that of any other engine-driven craft, some other sound must be sought—something as distinctive as the call of a robin or the neighing of a horse, something that by no possible chance can be mistaken for another sound.

"I found what I sought in the weird, shrill hum of a submarine. Others had heard that hum long before I began my experiments. It was taken for engine-vibration. But it is much too high in pitch for that, as I found by actual tests. . . .

"I soon convinced myself that the fine, shrill, almost singing note that can be heard when the Diesel engines are cut off and the submarine is traveling under power derived from her storage batteries is due entirely to her electric motors.

"The microphone at once suggested itself as a suitable instrument.

"In my first attempts to detect submarines by their characteristic hum, the microphone was sealed within a water-tight container and the whole placed in the water. The apparatus was a failure. It could not withstand the pressure of water even at five fathoms. The container was crushed like putty in a strong hand. . . .

"In order that the diaphragm might successfully resist the external pressure, air was forced into the container until its pressure equaled that of the water. The new form of apparatus was much more successful than that first used. Submarines could be heard beneath the water at a distance of five miles, and the apparatus stood up well, even at great depths. But it had the great defect of hearing too much. Not only was the hum of a submarine picked up with astonishing clearness, but other strange sounds of the sea as well—the vibration of engines in passing steamers, the beating of propellers in water. A steamer sets the water vibrating with an intensity thousands of times greater than that of a humming submarine. In that deluge of sound the submarine could not be easily detected. . . . Clearly, some kind of sound sieve was wanted—something that would sift out everything but the singing submarine."

[The "sieve" was obtained by the invention of the resonator.]

"This microphone, or electrical ear, as it may well be called, proved to be extraordinarily sensitive. . . . And it behaved curiously like a telephone. Talk squarely into a telephone-transmitter and the man at the receiver will hear you clearly; talk into the transmitter sidewise, and you will be heard less distinctly. So it proved with the microphone. When the singing note sent out by a submarine under water struck the microphone squarely it was heard much more distinctly than if the microphone were inclined to the sound-waves. That made it easy to note in which direction the submarine was traveling. The microphone had merely to be turned around until the hum was heard most distinctly.

"To determine the exact spot where a hostile submarine might be at any given moment two microphones were employed. Imagine two stations, *A* and *B*, along a coast-line; imagine a microphone detector in each, and imagine a central station, *C*, the headquarters of a naval officer in telephonic communication with stations *A* and *B*. The microphone detectors at stations *A* and *B* are turned from side to side until the submarine is heard with the greatest distinctness. Imaginary lines drawn perpendicularly from the microphones would meet at the point where the submarine is to be found, and

the length of the line can easily be calculated by a simple trigonometrical process.

"For the purpose of defense the harbors of the world are usually ruled off by artillery officers into imaginary squares, which are plotted on a map. Suppose that a submarine is in square 23. The officer in the central station *C* is told by the microphone operators in stations *A* and *B* the exact inclination of their instruments at the moment. He carries out a rapid trigonometrical calculation, and the result shows him that the submarine must have been in square 23 at the time his data were telephoned to him. At once he sends out either a fast motor-boat, armed with a gun, or a torpedo-boat destroyer, to square 23."

The French also busied themselves with this idea, and by the summer of 1918 the Allied navies had installed these and similar listening devices—"hydrophones"—as a means of detecting the presence and the course of submarines. The knowledge thus ascertained was used both for defense and attack.

ZIGZAGGING

The zigzag course proved a valuable means of defense for merchantmen in the danger zone. There is nothing new in the idea of confusing the aim of an enemy by sudden changes of course; every fugitive had practiced it since the days of bows and arrows. But it remained for the exigencies of this war to reduce it to a science for ships, and to reinforce the theory by a mechanical device. The following explanation from the *Scientific American* makes the matter clear:

"In the popular mind, zigzagging is associated with the efforts of a steamer to escape after she has been sighted and attacked by a submarine; in other words, zigzagging is regarded as a sort of runaway forlorn hope—the maneuver by which the sorely beset steamer tries to get out of the way of the unerring flight of the torpedo. As a matter of fact, if ship captains obeyed instructions they would commence to sail zigzag courses as soon as they entered the submarine zone and would keep it up until they were safe in port. Unfortunately, the skipper of your tramp steamer is a very conservative kind of a fellow, not given to changing his habits unless he can see the very best of reasons for it, and he is always in a hurry to make port on as direct a course and at

the best speed at which his slow-turning engines will shove him along.

"To-day, zigzagging has a protective value which it did not have before merchant ships were armed. Now that the tramp is apt to carry a rapid-fire gun of from three- to six-inch caliber, the U-boat, once it has come within the effective range of the gun, must stay below. In the old days, a submarine with 14 to 17 knots speed did not hesitate to run down its prey on the surface, and a large proportion of the victims were sunk by gun-fire. But when merchant ships began to mount powerful guns with navy-trained gunners behind them, the sinking, even of slow tramps, became a very difficult and hazardous task. Because of its limited storage capacity, the U-boat is using smaller torpedoes than those carried on the battleships, and torpedo speed and range have been sacrificed in favor of an extra-large charge of explosive in the warhead. The U-boat commander prefers to get within one thousand yards of a ship before he attacks, and, if he can make it, he will get within five to seven hundred yards. The preferred position for attack is about two points forward of the beam. On sighting an approaching ship, the submarine heads to intercept her course, submerges, and then takes an occasional look at her, bringing its periscope above water for a few seconds only. The U-boat commander estimates the speed and course of the ship; submerges, and lays his own course by compass while below, so as to bring his boat within torpedo range at a point preferably forward of the beam.

"Now, if, while the submarine is below, the merchant ship changes her course, say through an angle of 45 degrees, the former, on coming up for a few seconds' look at the ship, finds that instead of converging to meet him, the merchant ship is sailing in a direction entirely different from that on which his calculations were based; his maneuver for getting into firing position goes for nothing, and he has to try again. Unless he is satisfied that his guns can greatly outrange the enemy, the U-boat commander does not dare to use his surface speed, and below the surface he has not sufficient speed to overhaul the merchant ship. One or two misjudgments of this kind will lose so much time, that the ship will have a good chance to pass him and steam beyond torpedo range; indeed, it will soon have gained a lead which the U-boat cannot overcome, except by coming up and using his surface speed.

"We have referred to the reluctance of many steamship captains, especially the captains of tramp steamers, to go to the trouble of zig-

zagging. Not only is more distance covered, but the navigating officer may forget to make the change of course from one leg to the next at the proper time, and so throw the whole zig-zag into such confusion that the ship will not know where she is with regard to her true course. In order to prevent this, and with a view to making the running of the zig-zag course popular with ship captains, the first officer of one of the large British merchant ships has invented the simple and very effective 'zig-zag control board.' It consists of a board about 2 or 3 feet square, carrying in its center a clock, and on each side of the clock a series of alternate green and red cards and glow lamps, each card and lamp corresponding to the starboard and port courses on which the ship is being navigated at any given time. Above the clock, extending across the head of the board, is plotted a zig-zag course which it will take the ship one hour to cover.

"There are seven changes of course during the hour, at the end of which the ship is back again on her true course. In this particular zig-zag, a 12-knot ship loses two knots of distance in one hour, which represents a loss of about fifty miles in the twenty-four hours; but it is better, surely, to lose fifty miles of distance than to lose the ship."

The most important defensive measure for merchantmen was, of course, the convoy system, old as naval history but singularly late in being adopted even after the submarine peril had assumed the most fatal proportions. The organization of the convoy and its application to the merchant fleets and to the transport service are fully discussed in Part I.

THE SMOKE SCREEN

The smoke screen was often used in the war both for the protection of merchantmen and the covering of battle tactics. Apparently as a tactical measure it was first put into practice by the American Navy in fleet maneuvers several years before the war. In this instance the smoke came simply from the funnels of the destroyers. When the war began, it was suggested that a steamer attacked by submarines might throw out a heavy cloud of smoke and then, turning to windward and shutting off her draft, escape behind the screen of smoke left to leeward. Blockade runners of the Civil War did this trick repeatedly when pursued by Federal cruisers. It was partic-

ularly adapted to oil-burning ships, because oil smoke is denser and slower to dissipate than that from coal.

As it was not always practical to create this smoke screen from the fire-room, special apparatus was invented for producing a smoke screen in large quantity and on short notice and ships entering the war zone were equipped accordingly. There were, in fact, two kinds of apparatus: one, a smoke funnel, and the other a smoke box to be thrown overboard. Both of these burned a phosphorus mixture which gave out a thick, black smoke cloud that lay low over the water and hung together for several hours. In the battle of Jutland the Germans revealed the possession of a smoke screen much more effective than any known to the Allies, and it served them in good stead. Under cover of this, the whole fleet made a turn under fire and escaped. On the British side an effective smoke screen was devised by Wing Commander F. A. Brock for the successful attack on Zeebrugge in April, 1918, an action in which the gallant officer met his death.

NAVAL CAMOUFLAGE

Another device for deceiving the eye at the periscope was camouflage. This idea is one of the most ancient in warfare, although it was never carried to such lengths as in the World War. The Romans of Caesar's day noted the fact that the ships of the Britons were painted light blue—masts, hull, sails, and rigging—even the dress of the seamen. Hence they were called *pieta*—the painted ships. Of course the object of this coloring was to make the vessel blend with the colors of sea and sky. The pirates of the Mediterranean in the days of the Greeks painted their vessels similarly, and for the same purpose. And a Turkish scout managed to enter the harbor of Messina at night and count the fleet of the Christians, shortly before the battle of Lepanto, by means of a galley painted black and bearing black sails.

In this war the importance of concealing from aerial scouts the position of artillery and the movements of troops, made a science of camouflage absolutely necessary on land. It was therefore developed with great care and accomplished its purpose well. Hence it was natural that the idea should be transferred to

the sea. Ships were "dazzle-painted" to deceive the U-boats in all imaginable ways. One plan was to misrepresent the outlines in such a way that at a distance it would be impossible to tell which way the vessel was going. Others bore the representation of a huge bow wave to give a false impression of speed. Transports sometimes had the silhouette of a destroyer alongside. Most ships, merchant or man-of-war, bore simply a pattern of colors designed with the idea of taking such liberties with the lights and shadows of nature that the eye of a submarine captain would be confused. After the United States entered the war the camouflage of ships became compulsory, and the Navy Department furnished designs for the different ships. Our fleet accordingly abandoned its familiar "battleship gray" and became as gaudy as the worst.

Nevertheless, the effects of light and color on the sea are very different from those on land. There is, for instance, no foliage, no contour of rock and hill; it is a straight away expanse of a single substance in constant movement, and the way an object looks at a distance depends on the light. If the sun is behind, no amount of camouflage will prevent a ship from presenting a clean silhouette against the sky. It is not surprising then that the Admiralty should have issued a statement on January 12, 1918, to this effect:

"The theory of rendering ships invisible at sea by painting them various colors is no longer tenable. Endless endeavors have been made in this direction, but the numerous schemes tried by the Admiralty under actual conditions at sea have invariably been disappointing. They finally established that unless a vessel and her smoke can be rendered absolutely invisible no useful purpose is served.

"The application of Thayer's Law is most commonly put forward as a means of obtaining invisibility. This, broadly speaking, is an adaptation of Nature's means for eliminating shadows and so reducing the visibility of birds and animals at close quarters, either for purposes of attack or defense, and it is stated that this can be applied to ships by painting the ceilings of promenade decks or other projecting structures white in order to eliminate all shadows. Actual experiences at sea have proved that this is a fallacy, and that the paint itself, being dependent on the light of the sky, will not overcome shadows."

THE SUBMARINE MINE

The last and perhaps most important single defensive weapon against the submarine was the mine. This was not a new thing in naval war, but it developed amazingly under the pressure of the great conflict of the last four years. In the Civil War the Confederates made sufficiently deadly river and harbor mines out of such material as beer barrels and a tube of sulphuric acid; in the last war all that modern science could contribute went to the construction of mines that floated or that anchored at any desired depth on the floor of the North Sea. One of the never-ending contests of the war was that of laying mine fields and sweeping up those of your enemy. Submarines added to their potency by being equipped as mine-layers, and in turn they found one of their greatest perils in the mine field itself.

Already, in the story of the Dardanelles exploits by French and British submarines, we have seen the terrible risks taken by the under-sea craft in navigating waters protected by mines, and it must be remembered that in addition to the mines that were planted at the Dardanelles, there was also an unending flow of floating mines traveling down the current, such as the one that caused the tragic end of the *Bouvet*.

When the war was young, British harbors and channels were innocent of any mine protection. It was the Germans who sprinkled the waters with mines, one of which, for example, off the northwestern extremity of Scotland, cost Britain the *Hampshire* and the life of Lord Kitchener. Toward the latter part of the war, it became a settled policy to lay such barriers of mines as to hem in the submarine in his lair. The first was the "barrage" across the Dover Channel route. There followed toward the end of the war the great North Sea barrage, from the coast of Norway to the Orkneys, and another mine field, begun in 1917 and enlarged early the following year, extending from a point near the Dutch coast round to that of Denmark. In laying this, fast British vessels penetrated Heligoland Bight during the night, sowing their mines almost up to the door of the great Heligoland naval fortress. The great northern barrage was primarily an achievement of the American

Navy, and will be considered in the subsequent pages devoted to the work of the United States in the war. Just how many submarines were destroyed by these huge mine fields it is impossible to say. Moreover, the work on them had hardly been completed when the Germans threw up the sponge. Still, there can be no question but that as a defensive measure against the German submarine nothing could be so effective as a barrier of mines, patrolled by the surface units of the Allied navies. It is, in the words of Mahan, an "offensive-defensive" measure, which is the only real defense.

THE PARAVANE

No discussion of mines would be complete without reference to an anti-mine invention, the paravane, which has tended to give surface fleets a much needed protection against this under-water peril. The paravane came into being toward the end of the war, and just how successful it might have been in a fleet advance through a known enemy mine field was never demonstrated. But it is noteworthy that British ships, after the armistice, made a safe trip to German ports, guarded by paravanes. Ships of war and transports were equipped with it, for the naval men thoroughly believe in it, and it may in the future have an important bearing on the whole problem of fleets versus mines. The principles of the paravane are thus explained in the *Scientific American*:

"Briefly described, the paravane may be said to comprise a hollow torpedo-shaped body, a plane member terminating in two floats, horizontal and vertical rudders forming the tail, and a cable-cutting jaw. In operation the paravane is towed by the ship which it is to protect. It is towed on either side of a ship by means of a single cable leading back from the bow. The point of attachment to the bow is about ten feet below the surface, and each paravane maintains a parallel course about twenty-five feet away from the ship's side. As they are being towed at a depth of about ten feet, the paravanes can be plainly seen from the deck of the ship, having much the appearance of sharks.

"The plane member and the rudders of the paravane, as well as the position of the towing cable, maintain this device at the proper depth and hold it to the parallel course. Aside from the towing cable, there is another cable connecting the paravane with a small boom or davit

on the fore'st'le. The purpose of this cable is to haul in the paravane, as well as to operate the cutting jaw in the more recent models. The hauling cable is pulled taut, while the other cable is practically free from strain except when it is working the cutting jaw.

"Given two paravanes and two taut cables which form a V-shaped fender at the bow of a ship, it is a simple matter to understand what happens when such a combination enters a mine field. The mines are anchored to the sea bottom by means of steel cables. The paravane cable nearest the mine engages with the mine cable, pushing the mine aside and causing the mine cable to slide along until it comes to the jaw of the paravane. The jaw soon cuts the mine cable, releasing the mine, which then bobs up to the surface. At this point in the game the floating mine is exploded by rifle or machine-gun fire, thus ending its empty career.

"In the earlier forms of paravane the cutting jaw consisted simply of a rigid wedge with saw teeth. The force with which the mine cable came into the jaw, as well as the twirling and twisting of the mine and its cable, was depended upon to cut or tear the cable. In a more recent form the second cable of the paravane extends from the jaw to a winch on board the ship. The winch is arranged to operate continuously, but allows the cable to slip each time it has been wound up tightly. Thus the cutting jaw, which is hinged in this case, is alternately opened and closed so as to act as a pair of powerful shears.

"Most ships traversing mine-infested waters have been equipped with the paravane. American transports have all been equipped with the device. The *Leviathan*, for instance, is understood to have carried four paravanes on each trip, two for use in mined waters and two in reserve. At the high speeds made by this giant transport much trouble has been experienced with the paravanes, and it is said that a trip was seldom made in which two or three were not lost. In fact, it is the difficulty of handling the paravanes on high-speed ships that has often tempted the crew to get along without them, although they are recognized as a reasonably sure form of mine protection. On slow vessels, however, the paravane is readily managed."

The paravane has its limitations, to be sure. There is involved the element of chance as in many other phases of warfare. If the ship equipped with paravanes strikes a mine nose on, nothing can save it from a smashed bow, which entails the flooding of only a small portion of the ship. But if it passes a mine

but a few feet to one side, the paravanes take care of that mine in an efficacious manner. It is stated that the British fleet assigned to visit the German ports following the signing of the armistice traversed the mine fields without an untoward incident, thanks to their equipment of paravanes.

From the naval point of view the late war was unique. Hitherto line-of-battle ships had always been the measure of naval power, and they bore the brunt of the fighting. But in this war the dreadnoughts stayed in the back-

ground; they formed "fleets in being"—the power of one side weighing against that of the other—but not fleets in action, save for one indecisive meeting off Jutland. The active parts were played by the submarine and the small and swift enemies of the submarine. The dreadnought, as might be expected under these circumstances, came out of the war with little change; the destroyer gained a greatly enhanced importance, and immense progress was made in the Navy based on the two elements, the air and undersea.

SECTION V—THE U. S. NAVY IN THE WAR

NEW PROBLEMS AND HOW TO MEET THEM

American Naval Inventions—The Work of the Destroyers—The North Sea Mine Barrier—Submarine Chasers, Cargo Carriers, Losses of Transports, Etc.

I

THE German High Command had reckoned that unrestricted submarine warfare was advisable, because, even if the United States declared war, the submarines would have won the war before the Americans could throw any weight into the balance. Although the U-boats' destruction of shipping reached for only one month the enormous total of 900,000 tons, that was a staggering loss, and despite the declaration of war by the United States, the month of April, 1917, looked black indeed for the Allied cause. For the fact that the reckonings of the German High Command were erroneous in the matter of American influence on the war, we have to thank the British for their coöperation in the matter of ships, and the American Navy for its vigilance in the war zone and, above all, for its management of troop transportation.

This war for us differed from any other we have ever fought on the sea. Hitherto we have measured our successes by battles, and our Navy had been trained for fighting on the big fleet scale. But this war offered prob-

lems utterly different from what had been expected of the next war. There was small chance of fleet meeting fleet in a big decisive action. What was needed was a means of beating the submarine, a work in which all the naval resources of the Allies were already being strained to the utmost. Our naval history in this war, then, became the story, not of battles but of coöperation. The word to characterize the service of the American Navy is team-work.

OPENING ACTIVITIES

The first task of the Navy was to provide guns and gunners for the merchant ships bound for the war zone. To quote the Secretary of the Navy:

"Nobody in the country, in years gone by, ever dreamed that the Navy would be called upon to arm merchant ships and furnish expert gunners to protect them from submarines. And yet that was the first duty the Commander-in-Chief assigned to the Navy. The men in the big ships had been training to shoot big guns at big ships at long range. That was the thing deemed most necessary, as it was the most

difficult. Hitting any target, big or little, at a distance of ten to fifteen miles, from a rolling emplacement, calls for the most skillful marksmanship. Practice with smaller guns at small targets had not been neglected, but it was regarded as secondary to big gun practice. So, when the call came to arm merchant ships and furnish gun crews to hit small periscopes, it was a large order. At first the *Mayflower*, the *Dolphin* and the smaller craft were stripped of trained gunners for this hazardous and hitherto unexpected duty. It is a proud sorrow to the men of the *Dolphin*, which in peace times is called 'the Secretary's ship,' that one of its brave young gunners, John Eopolucci, was the first to give his life in protection of America's resolve to maintain 'the freedom of the seas.' Immediately, the battleships were converted into training ships, gunners' schools were opened, and as fast as the call came for them, trained gunners were ready with a cheerful 'Aye, Aye, Sir' to the call to danger and the struggle to make the seas safe. Big ships were denuded of their smaller guns to equip merchant vessels and work on new guns was hurried with unprecedented rapidity."

AMERICAN DESTROYERS REACH THE NORTH SEA

At the same time there was a cry from the war zone for all the destroyers we could send to help keep the sea lanes open and sink submarines. Accordingly no time was lost in dispatching the first division of American destroyers, under Commander Joseph K. Tausig. The following excerpts are from his account of the trip in the *Army and Navy Register*:

"At 9:30 one April night I received orders to proceed at daylight to my home navy yard to fit out for distant service. What was before us I did not know. There were five other commanding officers of destroyers who received the same orders, and at five o'clock the following morning we left Chesapeake Bay and were on our way to New York and Boston at high speed, in order that we might get ready as soon as possible for whatever it was to be.

"So anxious was the Navy Department that the outside world in general know nothing of the movement of these ships that not even I, who was in command of the expedition, was informed of our destination. We went to the navy yards, the ships went in dock, had their bottoms cleaned and painted, we took on stores

and provisions to last three months, and in a few days sailed from Boston. My orders were to proceed to a point fifty miles east of Cape Cod and then open my sealed instructions. Until I got to that point, at midnight of the first night out, I did not know that our first port of call was to be Queenstown, Ireland.

"It was quite natural that the few in authority who knew of our movements watched with anxiety for news of our crossing. It was the first time that vessels of this type had ever made so long a continuous passage without refueling or without the company of larger vessels. We were ten days in making the trip, due mostly to



Harding in the *Brooklyn Eagle*

"He's a Devil In His Own Home Town!"

a southeast gale, which accompanied us for seven of the ten days. So rough was the sea during this time that for seven of the ten days we did not set our mess-tables; we ate off our laps. On the ninth day we were pleased to be met by a little British destroyer named the *Mary Rose*. She picked us up early one morning and came along flying the international signal, 'Welcome to the American Colors.'"

"WE ARE READY NOW"

Accompanied by the *Mary Rose*—sent down three months later by a German raider—the American flotilla proceeded to Queenstown on May 4, 1917, where it was welcomed by the

British commander of the station, Sir Lewis Bayly. On being asked how long it would be before the Americans would be ready to go on patrol, Commander Taussig replied that all repairs had been made on the trip over, and "We are ready now"—a phrase that may well take its place among the slogans of the American Navy. The work that followed, as described by Commander Taussig, is typical of the service of all the patrol flotillas in the war zone. He writes:

"The British Admiral told us that we would go on patrol duty for six days at a time, and then come in for two or three days' rest. In this patrol duty we were assigned to certain areas, as far as three hundred miles off shore, as the submarines were then operating that far out. Our orders were to destroy submarines; to escort or convoy valuable merchant ships; to save lives if we could. We did escort many ships, and we did save many lives.

"I can not say that we sank many submarines. The submarine, I found, was a very difficult



Drawn by Frank Brangwyn.

"American Sailors to the Rescue"

"The seriousness of the work before us was made evident, not only by the large number of vessels that were being sunk, but by the fact that the night before we entered the harbor a German submarine had planted twelve mines right in the channel. Fortunately for us, they were swept up by the ever-vigilant British mine-sweepers before we arrived. The day following our arrival one of the British gunboats from our station was torpedoed and her captain and forty of her crew were lost. Patrol-vessels were continually bringing in the survivors from the various ships as they were sunk.

bird to catch. He has tremendous advantage over the surface craft. In the first place, he always sees you first. This is because when on the surface he is very low, and when submerged he has only his periscope out, or perhaps nothing at all. As he was not after destroyers, he avoided us whenever he could. That is, if he saw the destroyer on the horizon, the submarine immediately went the other way.

"When we saw a submarine, which sometimes happened frequently, and at other times several weeks might pass without seeing one, we would immediately go after him full speed,

and open fire with our guns in the hopes of getting in a shot before he submerged; but he always submerged very quickly. Only once did my vessel in seven months succeed in actually firing at a submarine. He then went down after the fifth shot was fired. At that time he was five miles away. But what they are afraid of are the depth charges or depth bombs.

HOW A DEPTH CHARGE WORKS

"I will tell you how they operate. A depth charge is about two or three hundred pounds of a high explosive. It is fitted so as to explode automatically at any depth we may desire. The destroyers and patrol-vessels carry them on deck at the stern. When we see a submarine submerge we try to find his wake, and if we can see the wake of a submerged vessel we run over it, drop the depth charge by simply pulling a lever, and in a few seconds there is a terrific explosion.

"This explosion is so great that on one or two occasions, when I happened to be in the chart-house when they let go, I thought my own ship was torpedoed. They can be felt under water for a distance of several miles, but, of course, they must be dropped very close to the submarine in order to destroy him. If we get it, say, within ninety feet of the hull, it may damage it enough to cause him to sink, otherwise only superficial damage may result.

"The submarines did less damage as the summer wore on, due, undoubtedly, to having more patrol-vessels.

DESTROYERS AS CONVOYS

"Then the scheme was taken up of having convoys. The advantage of a convoy is that six or ten destroyers can protect from twenty to thirty merchant ships, while in the patrol system only one destroyer could be with one merchant ship at a time. The convoy system has now developed so that practically all vessels passing through the danger zone are in large convoys of from ten to thirty, with an escort of from six to ten destroyers.

"These convoy trips would take us out of port from six to eight days. They were very trying days, especially during the latter part of fall, when the weather got bad. When we are at sea in this way we do not take off our clothes, neither officer nor man. We must be ready at all times. We do not even have the pleasure of taking a bath, as something might happen and we would not be ready for it. As one young officer expressed it, we had to come down to the

Saturday-night bath habit, and if we happened to be at sea Saturday night we might be out of luck.

"The night work was very difficult, as the danger of collision was great with so many ships without lights operating in close proximity. There are frequent collisions, and we must use our judgment as to whether we should turn on our lights and avoid the danger of collisions, and take the risk of a submarine's seeing us, or keep our lights out and take our chances. We have this to remember, that if a submarine sinks us she only sinks one ship, but a serious collision may result in the sinking of two ships."

Commander Taussig concludes with a tribute to the cordial spirit of cooperation shown by Admiral Bayly, a sentiment heartily concurred in by every American naval officer who served under him. As for Admiral Bayly, he expressed himself, on more than one occasion, as delighted with the zeal and efficiency of the officers of the American destroyer divisions. As evidence of the long patrols maintained by these destroyers, in all weathers, we may quote the record of the *Kimberley*, which during the month of June covered 7,019 miles!

TRAINING THE NEW PERSONNEL

While our destroyers, first division, were rolling over the Atlantic toward Queenstown, plans were being put into effect for the expansion of the Navy for the needs of the war. On July 1, 1916, there were 4,293 officers and 54,234 enlisted men in the Navy. A year later, three months after the United States entered the war, the number had grown to 8,038 officers and 171,133 men. By the time the armistice was signed these figures had swelled to 32,474 officers and 497,030 men. Naturally a large proportion of the officers and men represented by the increases were "reserves"; that is, naval volunteers who came in for the war and who needed to be trained before they were fit for service. Accordingly special courses were established for officers and men. The Naval Academy was enlarged to make room for larger classes in the regular courses, which were shortened from four years to three; and an intensive training course for reserve officers was organized, by which men were prepared to assume the duties of a deck officer after about sixteen weeks in study and

practical drills. At the same time the Great Lakes Training Station was enlarged to take care of the sea-going education of the recruits, and under its Commandant, Captain William A. Moffett, proved to be a magnificent success in organization and spirit. Other smaller Naval training stations were set up at other

in itself, which remains to be discussed at length under the engineering achievements of the Navy. Submarine chasers were built with all speed and hurried to the scene of war. And since the destroyer was the one type of warship most needed in the fight with the submarine, work on the dreadnoughts and bat-



Photo by Skerrett.

First Lessons in Seamanship

Many lads who had never dreamed of the mysteries connected with the knotting of a rope were fast initiated into all the phases, when taken into Uncle Sam's sea service.

points, notably Pelham Bay, Newport, and Norfolk.

HOW THE NAVY GREW IN MATÉRIEL

The increase in personnel ran parallel with the increase in *matériel*. Between April, 1917, and December of the same year, the number of vessels in the Navy had tripled, reaching a total of over a thousand. Hundreds of fast boats had been taken over from private ownership—yachts, motorboats, and the like—and had been converted into submarine chasers, mine sweepers, and other types needed. The German interned vessels were repaired and put into service as transports—a remarkable feat

tle-cruisers for the Navy was relaxed in the effort to concentrate on the kind of vessel that counted most in the emergency.

The United States entered the war with about 60 serviceable destroyers, and the same number under construction. Contracts for new destroyers were let to every yard that could build them. The government enlarged plants already in existence and built others, so that engines might be constructed, gears cut, and other structural parts turned out for these ships with the least possible loss of time. Congress appropriated \$350,000,000 for the new destroyers and the special plants required for their rapid completion. Under the pressure of the time and the enthusiasm of the workers

all records for building ships of this type were broken. Destroyers that formerly required from 20 to 22 months to complete were turned out in half that time. A record was made by the *Ward*, of 1,000 tons and more, which was launched in 17 days after the keel was laid, 89 per cent. complete!

This work on new destroyers represented only a part of the program. For the needs of the war, docks had to be enlarged, gun shops and foundries built, aviation stations established, training stations constructed and equipped, machine shops, munition and supply warehouses, and hundreds of other sorts of buildings incident to the needs of a Navy Yard had to be put up on a great scale. For this work the Bureau of Yards and Docks spent over \$100,000,000. At the New York Navy Yard, for example, \$5,000,000 was spent on new ways for accommodating the largest types of ships, on erecting the largest warehouses in the country, and on a hundred per cent. increase in its shops and storehouses. Similar expansion was reflected in the yards at League Island (Philadelphia), Norfolk, and Mare Island (San Francisco). Moreover, the government took over the Jamestown Exposition and the Pine Beach properties on Hampton Roads and made of them what the Navy has long needed, a fleet base. This includes bases for submarines and seaplanes, storage for supplies of every description from coal to calomel, a training station for 10,000 men, berthing accommodations for every type of ship, and many other necessities incident to a Naval operating base.

II

ENGINEERING ACHIEVEMENTS — ELECTRIC WELDING

WHILE the papers were playing up the efforts made daily in the various shipyards to break the record in riveting, a new method of construction came into prominence, which made an enormous difference for us in the matter of repairing the engines and boilers of the German liners which we needed to use in transporting troops. At the time of our entering the war the government took over all the German ships lying in our ports. Many

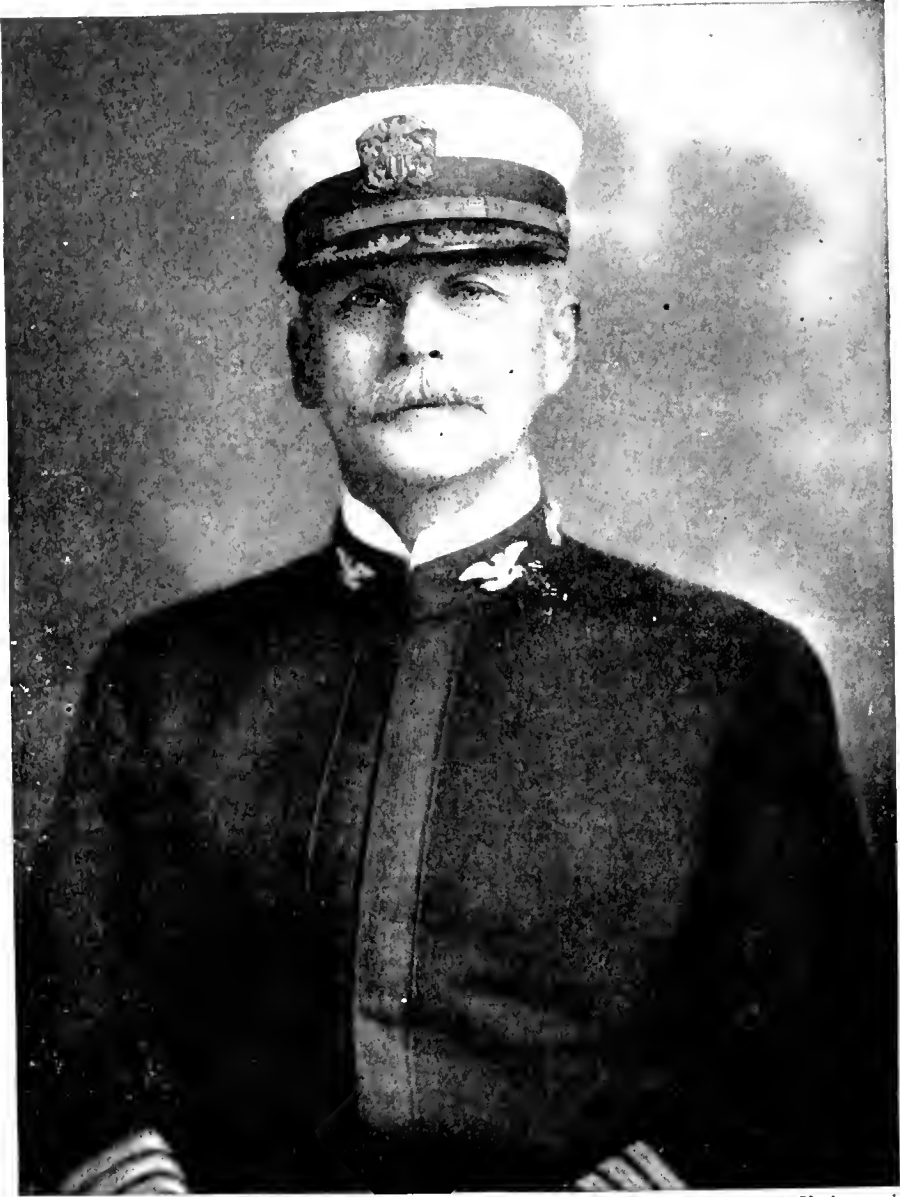
of these were the finest and largest liners in the world, just the type of vessel we most needed to get our Army across. But as soon as they were taken over it was found that they had not only suffered from the foulness and rust of three years' idleness but they had been deliberately and systematically wrecked internally by their crews. The chief damage was, in the words of the Secretary of the Navy's Report (1918), "the breaking of cast-iron parts of the main engines, chiefly the cylinders, though in one case piston rods, connecting rods, and boiler stays were sawed half in two, and in others the boilers were ruined by dry-firing and had to be renewed. There was, in addition, much vandalism of a minor character, but the remedying of this was insignificant in comparison with the gigantic task of repairing the cylinders, some of which were more than 9 feet in diameter."

REPAIR OF INTERNED GERMAN LINERS

"It was speedily recognized that the large passenger ships thus taken over would have to be our chief reliance in transporting troops to France, and their quick repair became a matter of great national interest. After a survey by representatives of the Shipping Board, which at the time had custody of them, it was decided to make new cylinders. This decision was in accord with usual practice and also with the rules of marine underwriters, and but for the number of ships and the large number of cylinders involved would probably have been followed. But the time required was prohibitive, and while the subject was under discussion a few of the ships were transferred to the Navy and sent to the New York Navy Yard for repairs.

"As the Navy was not bound either by previous practice or the rules of marine insurance societies, the engineer officer of the yard, after conference with an electric welding company, recommended that the broken cylinders be repaired by welding, and in this he was heartily supported by the industrial manager of the yard. The matter was referred to the Bureau of Steam Engineering, and the assistant to the bureau was directed to make a thorough examination of all conditions on the ex-German ships. As a result of his investigations, orders were issued to make all repairs where possible by electric welding and to resort to mechanical patching only where welding was impracticable.

"This decision, so far-reaching in its appli-



© Underwood and Underwood.

Rear-Admiral Nathaniel R. Usher

As Commander of the New York Naval district, extending from New London, Conn., to Barnegat, N. J., he held a post of great importance and heavy responsibilities.

cation and so fraught with danger to the professional reputation of the officers concerned, was made in the face of opposition by engine builders and by marine insurance companies, but with such confidence in the ultimate result as left no room for doubt of its success. Electric welding was well known, but its application on such an extensive scale was unprecedented; by

its use these damaged cylinders could be saved, the work could be done without removing the cylinders, and all the vessels could be made ready for service probably a year before they could have been if the cylinders were renewed.

"Upon completion of repairs, which were carried out uninterruptedly for 24 hours a day, each vessel was sent to sea for a test under full-

power conditions for 48 hours, the purpose being to ascertain whether the work of repair had been well done and to determine whether the ships were in condition to be intrusted with the transportation of troops. So well and so successfully were the repairs accomplished that there was not a single instance of a defective weld, nor was one developed during the months

by Lieutenant Commander Cathcart in the *Army and Navy Register*:

"One other feature of this matter deserves comment, and that is the military value of this work in the transport of troops. These fifty ships were in service for about a year before hostilities ended, and this is approximately the

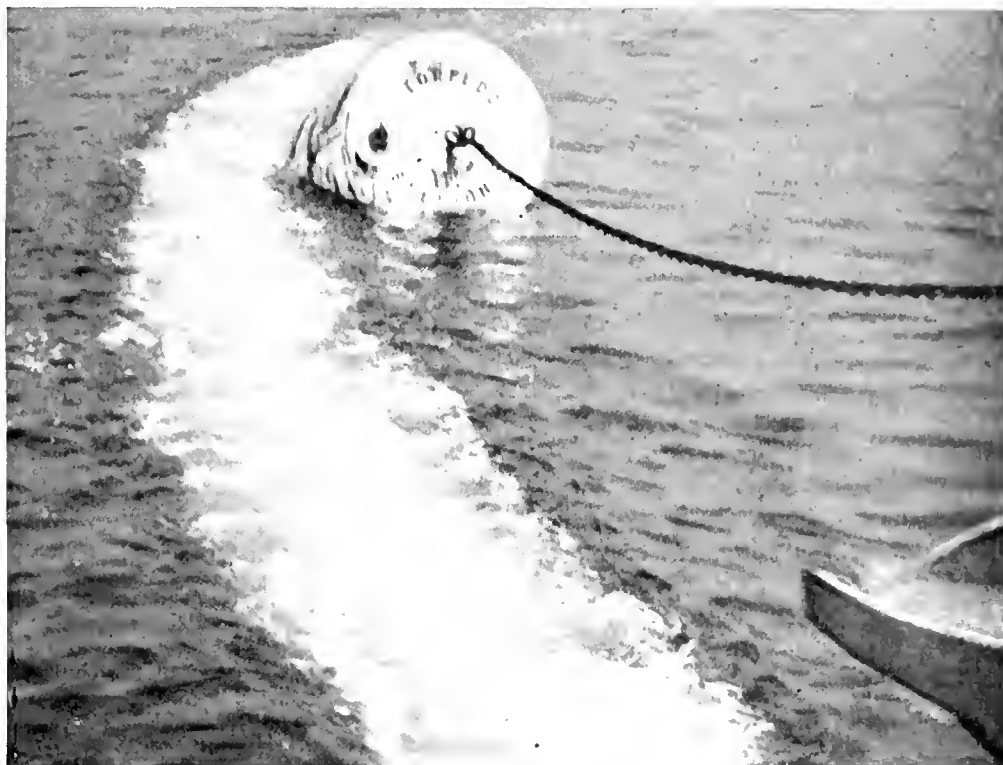


Photo by Hoag.

Courtesy of Leslie's Weekly.

Returning Home After Torpedo Practice

The aiming of a torpedo from a moving ship calls for quick and accurate estimate of speed, course and distance of the enemy. Special training schools for torpedo firing are maintained by our navy, the largest of which is located at Newport, R. I.

of arduous service on which these ships were engaged."

MILITARY IMPORTANCE OF THE FEAT

The rapid repair of ships which had been so methodically wrecked as to make their restoration to service a matter of at least a year and a half under ordinary methods, is a splendid achievement for our naval engineers. What this service meant to the cause of civilization may be realized by its bearing on the transport of troops. The case was thus stated

time saved in these repairs by using welding methods. Twenty of these vessels can carry about 70,000 troops in one trip, and ten round trips a year is a conservative estimate of their performance. So it may be justly claimed that the rapidity of these repairs had a marked effect on the early end of the fighting in France. It is true that criticism was leveled at the bureau for using these welding methods, and, too, by not a few engineers and shipbuilders. But the answer to all criticisms from every source is *that the ships are running, without accident or delay.*"

Nor is electric welding restricted to the repair problem. It is being used increasingly in the construction of ships as well. According to its adherents, this method promises to cut down the time and the costs of ship-building. It is said that one electric welder is able to do the work of ten riveters. Further, the welded joint is stronger than a riveted one, and the smooth side of a hull built by welding offers less resistance to the water than a riveted hull, thus tending to increase speed and lower the consumption of fuel.

ELECTRICITY USED FOR MOTOR POWER

Still another achievement of even greater value was the adoption of electric propulsion. Referring again to the Secretary's Report for 1918, we read:

"The most striking engineering accomplishment during the year was the completion of the electrically propelled battleship *New Mexico*, the results of whose trials confirm the judgment of the department in adopting this type of machinery for the battle cruisers, and mark an engineering advance which will affect battleship construction the world over. Electric propulsion had its inception in the Navy, having first been applied in the collier *Jupiter*, where its superior advantages were so clearly demonstrated that the Bureau of Steam Engineering recommended it for adoption in the *New Mexico* and subsequent battleships, and still later in the high-powered battle cruisers. It will be recalled that this decision of the department led to the bitterest criticism not only from engineers pecuniarily interested in other types of machinery but also from others eminent in their profession who had no pecuniary interest, but who feared that we were embarking upon an experiment that would be fraught with national calamity. Despite the criticism of these eminent engineers, the decision of the Navy Department, supported by the judgment of the best electrical engineers in the country, was followed in the full conviction that no mistake was being made. The wisdom of this decision has been amply vindicated by the performance of the *New Mexico*."

ELECTRIC DRIVE IS MORE SAFE

The term "electric propulsion" for battleships is liable to cause some confusion, perhaps, in the layman's mind. Such a battleship is still driven by steam, but the steam propels

her indirectly. The turbines drive enormous electric generators which, in turn, operate electric motors near the stern that revolve the propellers. This method does away with the long, heavy, steel shafting of the ordinary steam-driven ship. In explaining the advantages of the electric drive before the House Naval Committee, Commander P. W. Foote, U. S. N., called attention to the fact that it represented an economy over the old method and made her means of propulsion less vulnerable. On this latter point he said:

"To get the power from the motor you have four motor sets. . . . These motors, of course, are simply connected by a wire, which you can lead around the corners and put in a heavy tube. Each one of these compartments is separated into water-tight compartments. Another beautiful thing is you can absolutely destroy half of your motive power, one of the two big generating units, and the other unit will drive that ship still at seventeen knots; because you throw a switch and put either one or all of those four motors on both of them, or the four motors on one of them. And a torpedo could explode in this engine-room and blow out this generator and the ship would still go on; or you could blow out this motor compartment or two of them and she could still go on."

Unquestionably electric drive is an engineering advance of the highest importance in the future of men-of-war, and it is greatly to the credit of our own naval engineers that the world's pioneer electric driven battleship is American.

OIL PIPE LINE ACROSS SCOTLAND

Another achievement by the engineers of the American Navy was the laying of a pipe line across Scotland. This certainly has no precedent or parallel in naval history, and it is typical of the size and the unique character of the undertakings assumed by the Navy in the war. If a solution to a problem seemed reasonable, the mere fact of its being a matter of enormous scope made no difference in its being tackled and triumphantly put through.

One of the serious problems connected with the maintenance of our own fleet in European waters was that of fuel supply. In addition to this, it must be remembered that the coal consumed by our Army in France also had to be sent from the United States. Further,

the ships of the Grand Fleet that used oil for fuel had to depend on tankers coming from the other side of the Atlantic. Indeed, during the height of the U-boat menace there were times when it looked as if the Germans might defeat the British Navy by the expedient of torpedoing the oil ships on which the Grand Fleet depended. Of course, this fleet was based on the east coast, at Scapa Flow, in the Orkneys, and the Firth of Forth. The waters round the north and east of Scotland were the most profitable hunting ground for the U-boat, and so many tankers were destroyed in the region that it was evident something would have to be done if the British and American men of war were to have the oil which they needed.

Finally it was determined by the two navies that an oil pipe line should be laid across Scotland to the Firth of Forth, and the work was turned over to the Americans. It was no small task to lay pipe 40 miles, but the work was done promptly and well. As a result there was a great reduction in both the distance and the danger involved in the fleet supply of oil.

NAVAL GUNS IN FRANCE

As noted earlier, the exigencies of the war in 1917 made it necessary to postpone the completion of the heavy ships in order to concentrate on the destroyers. An additional battle-cruiser or dreadnought would have helped very little, but another destroyer meant a great deal. It happened, too, that the design of our projected battle-cruisers had been altered; in consequence we had some heavy 14-inch naval guns on hand that were in danger of lying idle for some time.

To make these guns count at a time when guns were needed, the Chief of the Bureau of Ordnance recommended that they be used for land service with our Army in France. The suggestion was promptly taken up, and the conclusion reached was that these guns should be mounted as a railroad battery, adapted to French railroads, should be made independent of any artillery base by carrying their own supply and repair cars with them, and should be manned entirely by naval men.

The work was pushed with extraordinary speed. In less than four months the railroad mount had been designed, approved, built, and delivered. "On December 26, 1917, not a

drawing had been started. On April 25, 1918, a completed gun was rolling on its own wheels to Sandy Hook Proving Ground for long range tests." * The equipment of these guns was most elaborate. Each gun was accompanied by twelve cars, machine shop cars, berthing cars, wireless, kitchen, armored ammunition, crane, fuel cars, etc. The whole outfit was so organized that when an order



© Underwood and Underwood.

Under Old Glory

Capt. Pringle, U. S. N. (right), standing with Vice Admiral Wemyss, on the latter's visit to the American battleships in British waters.

came to move all twelve cars as well as the gun itself could get under way in an hour.

These guns were manned by seamen gunners commanded by Rear Admiral C. P. Plunkett, and the men went to France ahead of their guns in order to get everything ready. The first of them arrived on June 9, 1918; the first gun went into action on September 16, near Laon. Thereafter they continued to pound German bases behind the lines which had hitherto been safe from Allied artillery,

* Secretary of the Navy's Report, 1918.

for these 14-inch naval guns had a range of thirty miles!

The Germans had already astonished the world with their guns of enormous range. A 15-inch naval gun near Ostend, for example,



© E. Muller, Jr.

Dropping a Mine Overboard

A contact mine, which is fired automatically when a ship strikes it, is shown above. Nearly all such mines contain charges of about 500 lbs. of gun cotton, about double the amount used in a torpedo. There are various firing devices for mines, nearly all of which are based on the principle of the trigger and cap.

had made a martyr of the city of Dunkirk during the greater part of the war, and in 1918 there appeared a "freak" gun that fired a small shell a distance of 75 miles into the heart of Paris. But these guns were all on permanent concrete foundations, and were therefore restricted in their area of operations

and liable to destruction by artillery or bombs when once their position was discovered by the air men. The great advantage of the American Naval battery was that it was movable to any point where a railroad track ran or one could be laid. If its position was discovered by a German aerial scout the fact did not help much because by the time he had made his report the chances were that the gun had moved on.

These guns proved so valuable to the Army in France that many more were requested before the armistice was signed. That the sea-going branch of the service should render such marked land-fighting assistance to the Army is only one of the many incidents in the war in which the Navy, faced with undreamed-of conditions, met them with unconquerable resourcefulness and efficiency. The story of the naval guns in France must be classed as one of the greatest engineering achievements of the war.

Moreover, it is worth remembering that if the day ever comes when the United States is called on to fight a defensive war, a mobile battery like this will be of very great value. Thanks to our elaborate system of railroads, heavy guns could be readily concentrated at any threatened point with ease and swiftness. The idea had been suggested before the war, but the Navy has made it practical.

III

THE NORTH SEA MINE BARRIER

THE biggest Naval engineering feat—if such it may be called—and second only to the transport of the Army as the greatest contribution of the American Navy toward winning the war, was the laying of a barrier of mines, hemming in the North Sea, from the coast of Norway to the Orkneys. Here again was a job so big, involving such a quantity of mines, so much organization, transportation, and such difficulties of depths and weathers that when it was first suggested it was looked on by most as a hare-brained scheme.

In June, 1917, the *Scientific American* published an article in which the author proposed something of the same idea. He suggested a heavy net moored by floats, from one coast

to the other. This net was to be about 200 feet in depth and to be studded with bombs at the intersections. A line of surface mines was to protect this curtain, aided by a series of mother ships for patrol boats and seaplanes that should maintain a constant watch along the line. This plan was not adopted, but its general conception was not unlike the one that was finally put into effect.

Our naval officers had long been of the opinion that something really aggressive should be undertaken against the U-boat, and were heartily agreed that the plan of hemming in the North Sea with mines was the thing to do—if possible. But there were serious practical difficulties. Indeed, the British authorities at first declared that it could never be done. How these difficulties were overcome, and how, with the coöperation of the English, the great undertaking was triumphantly carried through, are told by Captain Reginald Belknap, commander of the American mine-laying squadron, in the *Scientific American*. Captain Belknap says:

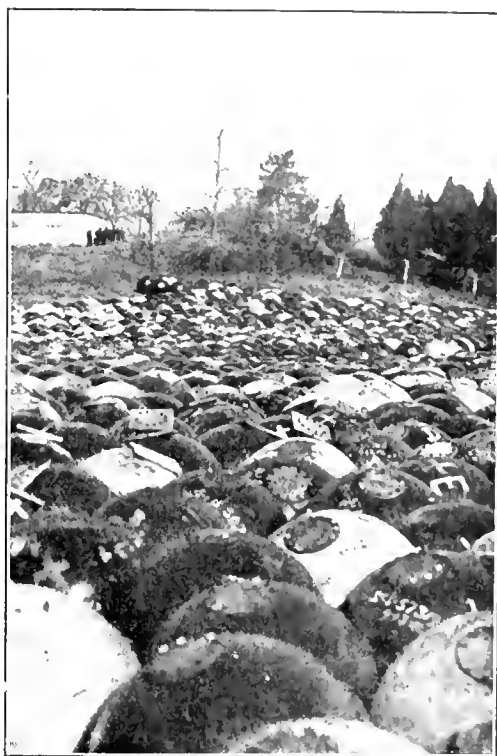
"British destroyers had been constantly planting mines near the German coast, but they could not prevent the enemy from sweeping channels through. Besides, since the Skagerrack could not be closed locally without violating the neutral waters of Denmark and Norway, the situation needed a barrier which would include the Skagerrack, and also be too far from the German bases for surprise in force. If only half successful such a barrier would still be more effective against submarines than merely hunting them at large. Yet it called for such numbers of mines, to provide and plant in a short time, as to make the undertaking appear impossible.

"Among the countless war inventions pouring into the Naval Bureau of Ordnance upon our joining the war, was one which, unsuitable in its original form, contained a device that was adaptable to the firing mechanism of a mine, with great possibilities if so applied, especially against submarines. The peculiar virtues of the new mine were extreme sensitiveness and twice the reach of any other mine—both qualities invaluable. The result was, briefly, that the Bureau of Ordnance could, in July, 1917, assure our naval authorities that, in urging the closing of the North Sea, they might at the same time offer the means for its accomplishment.

"Briefly, the project was for the United States and British mining forces to coöperate in estab-

lishing a minefield barrier across the North Sea between Scotland and Norway. The minefield would measure 230 miles long by 25 miles average width, consist of 70,000 mines, in 'systems,' each comprising one or more lines of mines near the surface, other mines deeper, and yet more, deeper still, so as to bar or imperil the passing of any vessel, whether on the surface or submerged.

"Bases for assembling the American mines were to be prepared in Scotland. Limited ca-



Sea Mines, Quantity Production

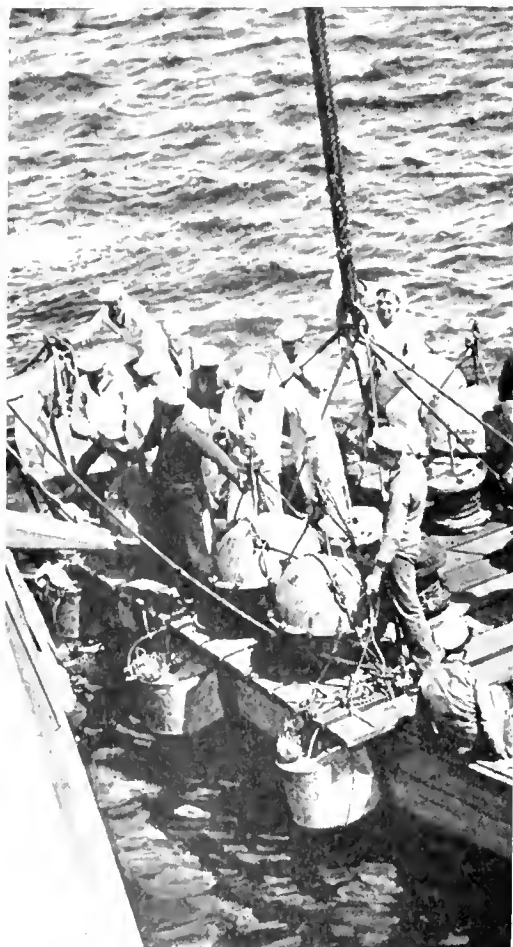
Photograph of just a very few of the 51,000 mines laid in the North Sea by the United States Navy.

capacity of transportation routes necessitated having two assembling bases for our Mine Squadron instead of one. These bases were constructed by the British Admiralty, Captain O. G. Murfin, U. S. N., being the supervisor on our part and in charge of the bases when completed. Most of their machine tools, furnishings, and other equipment were sent from the United States.

MANUFACTURING THE MINES

"Secrecy, as well as haste, necessitated dividing the construction of the mine among 500 con-

tractors and sub-contractors. Parts manufactured in different places were sent to a third place for joining, and all were finally sent to Norfolk, Va., whence they were shipped to Scotland, where the mines would be assembled complete for the first time, ready for planting.



Courtesy of Leslie's Weekly.

Preparing to Sow a Mine Field

Men of the *Nebraska* are loading mines from the battleship to a boat for distribution in a mine field. Up to the beginning of 1917, the navies of the warring nations lost between 30 and 40 battleships due to mine explosions.

The mine spheres were charged with high explosive at a plant near Norfolk, containing large steam kettles, which poured 300 pounds of molten TNT into each sphere. In this quiet corner the sailors worked in constant danger from fire and the poisonous fumes of the molten explosive. Several were seriously overcome and one died from the effects, but the rest stuck

manfully to it through the long, hot summer months.

"To carry the mine material over, small steamers were chosen, to minimize the effect on the operation in case of loss. One, the *Lake Moor*, was sunk by a submarine in April, with 41 of her crew, making almost the only loss of life in the whole operation. They had capacity of 2,000 to 3,000 tons and carried 1,200 to 1,800 mines, besides stores of various kinds. Our minelaying squadron and bases were supplied almost entirely from America, obtaining abroad little more than fuel, fresh meat and vegetables. There were 24 of these carrier steamers constantly employed, from February on, two or three sailings every eight days, all under the management of the Naval Overseas Transport Service.

"Towards making up a squadron large enough to undertake the barrier, we had the old cruisers *San Francisco* and *Baltimore*, converted into mine-layers in 1911 and 1915. In excellent condition in spite of their 28 years, and well prepared by two years' training and development in mining, they made an invaluable nucleus; but their combined capacity of 350 mines needed large augmentation. The manufacturing output was soon to be 1,000 mines a day, and the round trip for one minelaying operation could be estimated at not less than five days—coaling, embarking mines, out and back, ready for the next operation. Hence, a squadron with a capacity of 5,000 mines would be needed to keep up with the supply and thus plant the barrier as soon as possible.

"Eight merchant steamers were converted to carry mines on one, two, or three decks, making, with the original two, 5,700 mines capacity, thus providing a good margin for contingencies. Mines are carried on tracks of steel channel bar, placed with the flanges inward. The small wheels on the box-like mine anchor tread on the lower flange, while the upper flange serves as a check against the mines' upsetting in heavy rolling at sea. The mine spheres are secured fast on the anchors, so that mine and anchor go overboard together, the release of the anchor taking place after they reach the water.

HOW MINES WERE DROPPED INTO THE SEA

In our largest vessels, there were two long tracks on each side of the launching deck, which was the first covered deck; the same on the next deck lower, with shorter tracks in between at the ends; and similarly more below. On each deck there were several cross tracks, with a simple form of turntable at each intersection,

for convenience in loading the ship and to provide alternative routes for getting the mines out in case of a jam.

"Two launching ports, about 10 feet above water, were cut through the stern, one on either side of the rudder head, and about 20 feet of

the stern which is necessary to make the planting interval between successive mines uniform.

"At the stern, just inside the launching ports, were mine 'traps,' which held one mine at a time on a slope. Outboard, projecting about



© E. Muller.

Teaching Our New Jack Tars How To Lay Mines

Among the more recent and most valuable weapons of naval warfare are these metal shells, which hold from 200 to 1,000 pounds of gun-cotton, and are anchored in the entrances to harbors or in sea lanes from five to twenty feet below the surface. A passing ship touching the mine may either drive a pin into a fulminating cap and thus set off the charge or, by moving the pin, in a different kind of mine, it may complete an electrical circuit and so cause an explosion.

single track led, from each port, forward, to a switch connecting with either of the two long tracks. Steam winches were installed on all decks to haul the mines along, in trains or 'fleets' of 30 to 40. Each mine with its anchor weighs 1,400 pounds and as its wheels are small, it takes power to give the long trackful of mines the slow, steady movement towards

three feet beyond the ship's skin plating, the mine track curved downward, ending at 45 degrees. Upon throwing the trap lever, the latter jaws would open and the mine, of its own weight, would run down the slope, over the curved 'quadrant,' and dive overboard. At the same time, the trap's forward jaws would close, preventing more than one mine slipping through at

one opening. The mine track near the trap was higher than the rest, the up-grade serving to check the mine's surging sternwards while mining in a head sea.

"Control throughout the mine decks was effected by an electrical system of signal lights and gongs. At a central point, near the launching ports, the mining officer could communicate with the captain on the bridge, by telegraph indicator and voice tube, and could signal to stop, start, or reverse any winch. Stations were provided along the tracks, so that sentries, in case of a jamb or anything wrong, could signal to stop the winch concerned, and also to 'walk back,' or 'all clear' again.

"To enable the entire load of a ship to be planted in one continuous string, elevators were installed in the forward part of the ships, so that, as the mines on the launching deck moved sternward, those on the lower decks could be hauled forward to the elevators and sent up, to be planted in their turn. The elevators were hydraulic or electric, six in four ships, four in two others. All were the Otis Company's standard platform type, each lifting two mines at a time, in 20 seconds the round trip. The transfer capacity between decks was ample for the maximum rate of mine planting, even if half the elevators should become disabled, but during seven months in all kinds of weather, of 32 elevators, only one failed—once.

"In brief, the mining installation and organization provided for a well regulated movement of the whole mass of mines, in such a way that the ship's trim was preserved as long as possible, while the planting went on without interruption. The plans, workmanship, and training were so good that, on the first operation, the *Housatonic* planted 675 mines at 11½ seconds interval, without a break, and on a later occasion the *Canonicus* planted a string of 860 mines, 43 miles long, one every 15 seconds in 3 hours and 35 minutes.

"With mines filling so much of the living deck space, the crews were very crowded most of the time. Mines were constantly at one's elbow, horns and sharp corners ever ready to tear one's clothes, and everywhere were mine tracks, half-knee high, or turntables, to trip the unwary. But no complaints, good humor always. One ship's joke demands a wound chevron for every calloused shin. The officers and men felt intense pride and interest in their ships, and spared no effort to keep them in regular man-of-war condition. The 10 American ships made a handsome squadron, and the British officers, as well as our own, openly expressed their admiration.

THE YANKEE MINE FORCE AT ITS WORK

"The mining squadron formed the seagoing part of the Mine Force, under Rear-Admiral Joseph Strauss, U. S. N., headquarters at Inverness, his command embracing also the force on shore, and the repair ship *Black Hawk*, Capt. R. C. Bulmer, U. S. N. The minelayers arrived May 25, 1918, on time and ready for business, notwithstanding their state of chaos less than two months before—in fact, the squadron was never the cause of any delay and never failed in any operation. It was arranged that, upon 48 hours' notice, Admiral Beatty, of the Grand Fleet, would issue the orders for a mining operation, send a destroyer escort, and designate one or two battle or battle-cruiser squadrons and a light cruiser squadron, as a support against a possible raid. Though the two minelaying squadrons often went out at the same time, they operated in company only twice. There were 13 American operations, 11 British, and of the final total, the American Squadron planted 56,571, or four-fifths, and the British 13,546.

"Early in June, preparations were going full blast for the first minelaying operation. On shore the mine parts were tested, adjusted, and assembled, then the completed mines were sent by rail to the waterside for loading into lighters, to be towed off to the ships. After landing on the tracks on board, each mine was tested, for any derangement in the three handlings in transit from the base. By June 6th, everything was ready for departure at midnight. All possible secrecy had been observed, because information could be sent through to Germany in 18 hours or so—time enough for them to hatch out some kind of interference.

"Going out on a mining excursion—a word adopted for its cheerful suggestion of a return, tired but happy—our squadron's two detachments and the destroyer escort would unite just outside Cromarty, the minelayers forming in two columns, with the destroyers, usually 12 in number, spread in a screen ahead and on the flanks. The squadron flagship *San Francisco* always led one column and was guide for the whole force. The instructions for these excursions were as comprehensive as foresight could make them, while allowing ample discretion for emergency. All captains and the escort leader—usually Captain Godfrey, R. N., in H. M. S. *Tamper*—were furnished memoranda of the intended courses and distances, the mining order prescribed, the successive formations and any special procedure, and a planting schedule, accurate to the second, prescribed when, and

how many mines each ship was to plant. Once started, the planting could continue as intended, even in fog or darkness—in both of which conditions we laid mines several times, eight ships in line abreast, 500 yards apart, steaming at 12 knots.

EVER-PRESENT DANGERS

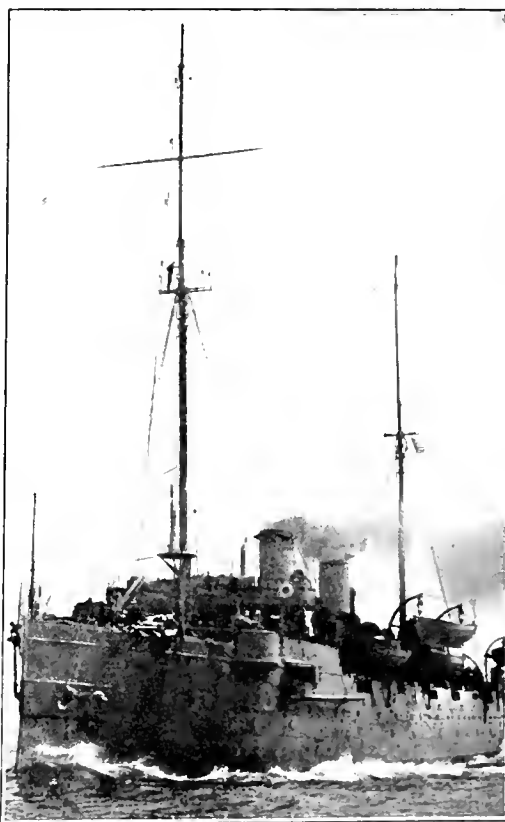
"Our courses led through waters where mines had to be swept for constantly. We steamed day and night in the regular thoroughfare of enemy submarines. The mine-field area had been publicly notified three months in advance, to warn neutral shipping—and the enemy might easily have strewn some mines there on the random chance of getting us. One ship blown up would have disabled or destroyed the other nine also. And as the planting progressed, we had to make use of navigation buoys, planted in the open sea, obviously for our use. The British had warned us from their own experience of the enemy's habit of moving such buoys whenever seen, or planting mines near them—sometimes doing both. Besides these exterior risks, there was constant danger from fire. The converted ships were full of woodwork, and what might have happened was shown since our return home, by the rapid spread of a fire in one ship, the night after she had cleared herself of mines. The sleeping officers had to escape in their night clothes, and the men in the engine room were barely able to attend the pumps without suffocation.

"There was the further chance of a surface raid. The destroyer escort was prepared to engage its own kind, as well as submarines, and even to make a sacrifice attack on light cruisers, to assist our escape; but our moderate speed—15 knots at best when keeping together—and the small number and caliber of our guns, made us rather helpless against an enemy cruiser's long range, six-inch gunfire and 28 knots speed. Moreover, when the enemy began to feel the barrier's restriction on his submarine operations, it was expected that he would attempt to sweep through and destroy us who were blocking his way. The heavy ships in support were intended to prevent that, or else to bring on a fleet engagement. In these ways our sensitive squadron would serve a double purpose, either one of which would help end the war—but possibly also ourselves.

"However, all that did not worry us. 'Stick to your job and go up with it,' was the prevailing spirit. The work was too interesting, steady and arduous for uneasy thoughts. The *San Francisco* and *Baltimore*, old hands at mining, set a high standard and fast pace, which

every man was keen for his ship to equal; and it was well understood by all hands that only the best efforts of every soul could make the kind of team work—throughout each ship and by all ships together—needed to produce the success promised in their name.

"When all mines were out of one ship, her line was prolonged by a parallel begun at the same instant by her prescribed successor. Mines



Courtesy of Leslie's Weekly.

An American Mine-Layer

The old cruiser *Baltimore*, one of the few vessels given over to this useful work.

were dropped every 300 feet, in lines 500 yards apart, the nearest distance the minelayers could safely steam abreast. The schedule arranged to narrow the minefield towards the finish, both for compactness and for a greater margin of safety in running the next excursion parallel and close to, when there might be a beam wind or unusual current, setting towards the former field. Taken altogether, minelaying is not too simple an art.

"When it finished planting, the squadron had made a trace like a music score, 50 or 50 miles long. A mile beyond the end, several mark

buoys were dropped, for use to 'butt' instead of 'lap' the next excursion; then back to the base. The men would clean up the decks, secure the mining gear, get a wash for themselves, and enjoy a smoke below—forbidden while mines were on board, and those who could, would sleep. Moving the 400 to 500-ton masses of mines, in slow but steady time, was very fatiguing, even with winches to help, on top of the many other duties common to all ships.

ENEMY SUBMARINES DESTROYED

"Theoretically, the mines in adjacent lines should be staggered, so as to halve and block each other's intervals, but in an open sea mine-field of immense area, 25 miles wide, with no guide marks whatever, no such nicety is possible or necessary. The great Northern Mine Barrage opposed from six to ten lines of mines to submarines on the surface, and three or four lines more at whatever depth the submarine might think he could safely pass. Absolute impassability there never was. A submarine had more chances of missing than of hitting a mine in one line, but not so for *all* lines—and one touch was enough.

"Before the first system of the barrier was half way across, reports of damage to the enemy began to come in. This was in early July, and before October, 10 submarines had been destroyed in the barrier and probably many more. From the very circumstances in that vicinity, the actual toll may never be known. The Germans admit 23 lost there, and other authorities ascribe the fleet's surrender and the final armistice largely to the defeat of the submarine campaign, which the Northern Mine Barrage forced the enemy to accept.

"And with due allowance for the poet's license, perhaps the claim may not be thought too extravagant, in the Mine Force song:

'That force of mine has done its share,
We fixed the U-boat everywhere,
When Vict'ry comes they'll all declare,
That mines have won the war.'

Sweeping up the mines after the war was another strenuous operation that was conducted successfully by the Mine Force of 59 ships. The work started May 9, 1919, and continued until the 30th. Besides the mines swept up, many were exploded by the sweep, others were exploded by rifle fire, but some got away. There was one life lost, that of Lieutenant Frank Bruce, and several sailors were injured by the explosions.

IV

INVENTIONS: THE AMERICAN DEPTH CHARGE.

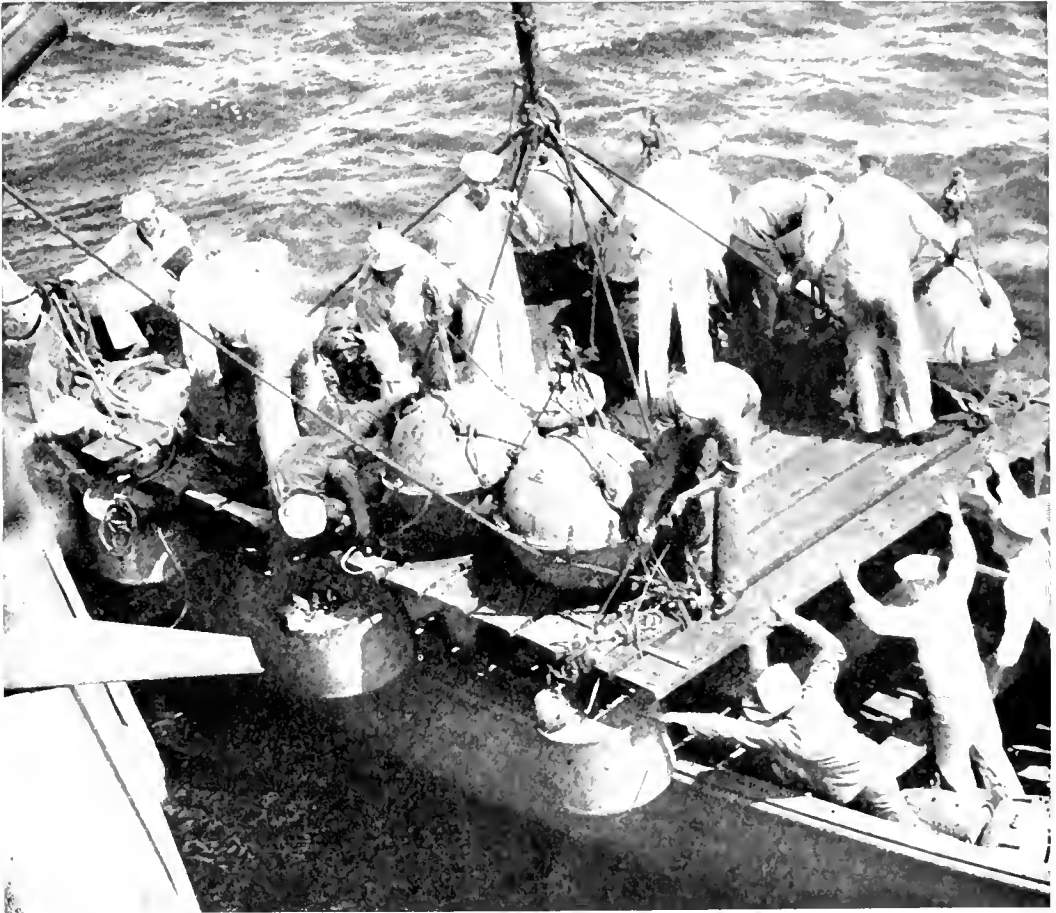
CLOSELY related to the engineering feats, which justify the remark that "this is an engineering war," are the inventions and improvements on weapons of war. Some of the American contributions have already been touched upon, as for example the microphone. When the United States took its proper place on the side of the Allies, there were not a few who hoped that a country that had been so famous for its inventions might produce the antidote to the submarine. As we have seen, the best answer to the U-boat proved to be the combination of destroyer and depth charge; no magic device appeared over night when the Americans took hold, they simply made the best of the methods that had stood the test of three years' experimenting.

Elsewhere we have already summed up the chief features of the prime weapon against the submarine, the depth bomb, but it will not be amiss to review the contribution of our own Navy toward making it so effective. Before the entry of the United States the depth bomb was being used but not to any great extent; it had not then been developed in power or effectiveness of handling. Our Naval Bureau of Ordnance began experiments with it in February, 1917, and accepted a design for one of fifty pounds of TNT. This was a very ingenious device operating on the float and line principle; that is, the line paid out from a float and the charge exploded at a designated depth. This could be set to any depth desired without changing the length of the rope.

But it soon became evident that against the powerful submarines the Germans were building this charge was wholly insufficient, and the experts set to work on the problem till they developed the hydrostatically operated bomb mentioned in a previous chapter. The credit for this highly important invention belongs to Mr. C. T. Minkler, then a draftsman in the Naval Torpedo Station at Newport. The charge was rapidly increased until in July, 1918, we reached the capacity of 600 pounds. But not many of these had been issued by the time the armistice was signed.

An important feature of the American depth charge is the safety device, or to be more accurate, the two safety devices. One prevents accidental explosion until the bomb is under water to a safe depth, the other prevents the charge exploding at all if accidentally dropped overboard when the vessel is not moving.

March of that year an officer of the British Naval Reserves, Lieutenant Commander Isherwood, and an American Naval officer, Lieutenant S. W. Cook, of the Bureau of Ordnance, devised a steel track which carried a number of bombs and released them quickly over the stern, and at regular intervals, the



© E. Muller, Jr.

Preparing to Plant Harbor Mines

Mine sweeping and mine laying were studied carefully by the American Navy during the war, and many a sailor was given special training in this important branch of naval warfare.

These were of incalculable value in storms that swept bombs overboard and in collisions in which they were crushed.

THE "Y" GUN

Until 1918 there was no standard device for launching depth bombs. Every ship handled them to suit its own convenience. In

whole mechanism being controlled by an officer on the bridge without loss of time. This was an immense advance over anything in use at the time but it was not perfect. The area covered by the charges represented only the straight or the curved line made by the course of the destroyer. It charges could be launched on either side, the chances of harming the U-boat would be greatly increased.

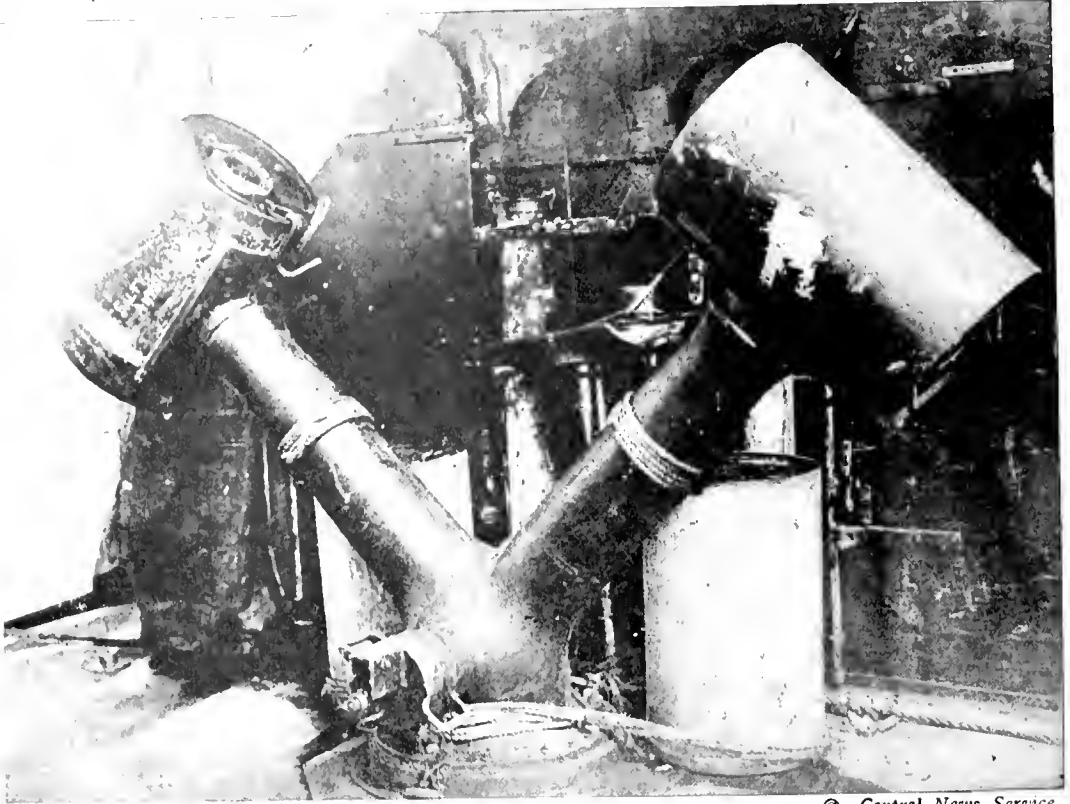
The result of this need was the "Y" gun. According to the *Army and Navy Register*:

"This consists roughly of a Y-shaped double-barreled gun, which on firing by a single centrally located pointer charge, projects a depth charge a distance of about 150 feet to each beam of the ship. Thus, in addition to one or more depth charges dropped from the stern of the vessel in crossing the estimated location of the

during the war in the effort to destroy submarines. The exact number of submarines actually destroyed or disabled is not known; but it is probable over 100 were sunk or seriously damaged by depth charges by the allied navies."

THE AIRPLANE BOMB

Before leaving the depth charge we should pause for a word about a related device, the



© Central News Service.

The Famous "Y" Gun

This strange-looking gun, invented by Lieutenant-Commander A. J. Stone, U. S. N. R. F., was used for launching depth bombs.

submarines, two depth charges could be thrown to the sides and thus greatly enlarge the area. The depth charges are mounted on 'arbors,' which are cylindrical stems 6 inches in diameter and 3 feet long, fitting into the barrels of the gun. These guns were supplied by the General Ordnance Company, Derby, Conn., from which deliveries to the service commenced in December, 1917. The Y-gun was invented by Lieutenant Commander A. J. Stone, U. S. N. R. F., of the Bureau of Ordnance.

"Approximately 10,000 were actually dropped

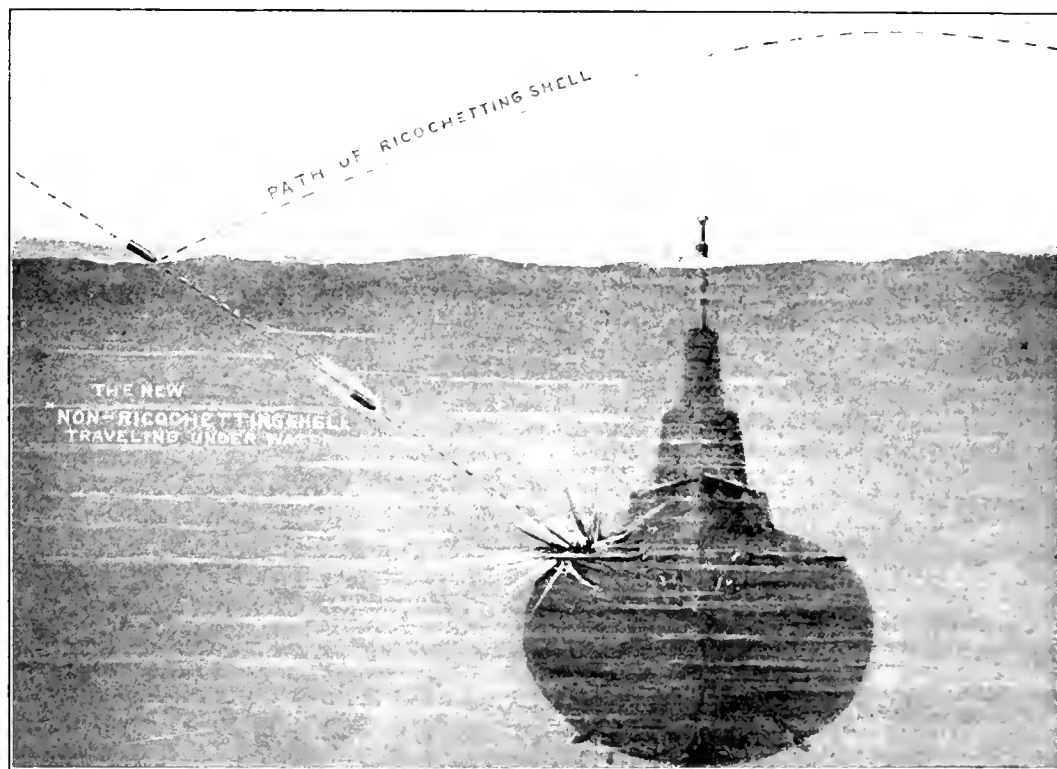
new American airplane bomb. The American Navy developed a heavy bomb for the use of seaplanes in the war on submarines following the analogy of the depth charge. In the past an occasional direct hit from the air had sent a U-boat to the bottom, but it is no easy thing to register a direct hit when the submarine and the seaplane are both moving and the latter is high in air. Therefore a heavy bomb was invented which could be set to explode at a given depth and even if it does

not make a direct hit will, on detonating, have the effect of a depth charge. Along with this, bomb-sights were perfected to a degree unsurpassed in any air service.

THE NON-RICOCHET SHELL

This invention, too, may be regarded as a first cousin to the depth charge. The trouble with the ordinary pointed shell is that when

"Shells which strike fairly smooth water at an angle of less than nine to ten degrees, if they are provided with an ogival head, will fail to 'bite' and will ricochet, or bound from its surface into the air. Sometimes the path described by the ricocheting shell will consist of great parabolas, in which case the shell may travel for a straight mile before it again strikes the water. At other times a shell will travel under and near the surface of the water, rais-



© *Scientific American*.

A New Type of Shell

As a means of combating the U-boats the British worked out an interesting form of shell which was non-ricocheting. Ordinarily a shell on striking water glances away somewhat from its true line of flight. This new shell, even when striking the water at a rather flat angle, bores down straight below the surface.

it hits the water it "ricochets"; that is, it is deflected, because when fired from a destroyer's gun it hits the water almost horizontally. The hitting power of a shell therefore would be vastly increased if it could be made to avoid this trick and keep straight on to its submerged target. This problem also was solved. The difference between the ordinary shell and the non-ricochet shell is thus explained by a writer in the *Scientific American*:

ing a line of numerous small geyser effects. The ricochet trajectory depends upon the range and velocity of the shell and the condition of the sea.

"For these reasons, much attention has been paid to the problem of devising a shell which, instead of rebounding from the surface, will 'bite' the water on striking, and continue its course below the surface. A recent dispatch from Washington states that the problem has been solved and that our ships are provided, or

soon will be, with a shell which will dive and strike a submarine, or burst in its vicinity, even though the enemy be below the surface. The shape of the shell cannot, of course, be disclosed at this time.

"The periscope is an exceedingly difficult object to hit, and a hit, at any considerable range, even by a first-class pointer, would be a matter more of luck than good shooting. But if the



© Underwood and Underwood.

"The End of a Perfect Day"

An American bluejacket blowing taps aboard the *Pennsylvania*

shells are of the diving type it is evident that, by dropping them a little short of the periscope, they would have a fair chance to strike the body of the submarine itself. This is true, even if the line of fire were normal, or approximately normal, to the longitudinal axis of the submarine; but, the chances of scoring a hit when the submerged submarine was end on to the attacking gun, would be very favorable, since the danger space would be equal to that of the length of the boat, or say one hundred and fifty to two hundred and fifty feet.

"Another advantage of the diving shell is that it can be adjusted so as to detonate when it has penetrated the water to any determined depth. In this case, of course, the action would be similar to that of the depth bomb, which has proved a most effective anti-U-boat weapon."

THE STAR SHELL

Admiral Jellicoe's story of the battle of Jutland makes mention of the star shells that the Germans fired over the British fleet, spreading a glare over the target, for which the British had no equivalent. Naturally the Germans continued to keep the construction of this method of night lighting very much to themselves, but acting on the hint, the American Navy turned out at least an excellent counterpart. The old method was the searchlight. But at the enormous ranges of a modern fleet action the searchlight is of little value. The Secretary of the Navy speaks of the American star shell as follows:

"There was an additional objection to the use of searchlights which the star shell overcomes. The beam of the searchlight at night, no matter how well screened and how well focused, presents a single pencil only and exerts a confusing and dazzling effect upon near-by observers. A yet more objectionable feature exists; the searchlight indicates the position of the vessel, so that the enemy has a clearly defined point of aim, steady and continuous, rather than only the intermittent flash of gunfire which in the absence of the searchlight would alone be a means of illuminating his target.

"These shells will be supplied to the vessels of our Navy so that they may illuminate the enemy at night as a target for their guns, without disclosing the position of our own ships. Not only, however, will we be able to use them for actual battle, but they will prove serviceable in the examination of suspicious objects, such as suspected submarines and vessels of any description met with at night. It is believed that this development alone represents an increase in the night-fighting efficiency of our naval vessels by at least 25 per cent.

"The illuminating portion of the shell consists of a single light, or star, attached to a parachute. A unique expedient has been adopted to prevent the aggregate rush of wind resulting from the high speed of the shell while in flight from extinguishing the light after the explosion of the shell. The velocity of the light and parachute has been reduced by expelling the con-



After Mess

tents of the shell through the base, and in this manner the light and parachute acquire a rearward velocity practically compensating for the forward velocity of the shell."

THE SEAPLANE CATAPULT

A practical difficulty in the handling of seaplanes had been the provision of a sufficient run-way on board ship for the plane to get up its speed before taking the air. This difficulty was met by the invention of Captain Washington I. Chambers, U. S. N.—a seaplane catapult, which literally slings the plane out from the ship's side at a speed ample to sustain it in flight. This device was a great advance over anything then in use, and makes practicable the carrying of aerial scouts on board our armored cruisers and battleships. By providing also for a quick start this invention helped a great deal in the prompt responding to a signal reporting the presence of a submarine. It contributed much, therefore, in use of seaplanes against submarines in the open sea.

THE TORPEDO PLANE

Another invention in the sphere of the seaplane is that of the torpedo plane. This was not the product of the war, for its inventor, Rear Admiral Bradley T. Fiske, U. S. N., took out a blanket patent on the idea as long ago as 1911. But it should be included here because, as noted in a previous chapter, it was tried and found successful in the war.

In simplest terms, the torpedo plane is a seaplane carrying a torpedo instead of a bomb. Whereas a bomb must be dropped on or near the target, a torpedo launched properly goes to its target any distance up to five miles. The advantage of such a weapon is obvious when one stops to think of the part played in the war by mine fields in checking surface and submarine activity. One can imagine what might happen to a squadron of dreadnoughts anchored in a harbor when attacked by a squadron of torpedo planes, for which the protecting mine fields meant nothing at all.

Although our own government took small interest in the invention, and apparently no other did before the war, there were two instances of its being tried out by the belligerents in the war and both trials were successful. In 1915 a British torpedo plane sank a Turkish troop ship anchored in the Sea of

Marmora, and while the feat aroused a certain amount of interest in the new type of seaplane, it did not stimulate any response on the part of the officials. In May, 1917, the Germans retorted in kind by sinking the British steamship *Gena* by torpedo plane, and they proceeded thereafter to collect planes of this type at Zeebrugge and Ostend for use against the British patrol. Finally the war came to an end before the British or the Americans were ready with a sufficient force of these aircraft to accomplish what they were best adapted for, an attack on the German fleet or fleet bases.

When Rear Admiral Hugh Rodman returned from service with the Grand Fleet he offered two main recommendations derived from his two years' experience in the war zone: (1) That the United States should continue to use submarines for defense; (2) that the United States should build new types of vessels equipped with airplanes able to attack fleets at close range with the torpedo. In addressing the House Committee on Naval Affairs in January, 1919, he said further on this subject:

"It is also unqualifiedly true that we shall also have to have entirely new types of vessels different from any we ever had, to carry aeroplanes both for scouting and defensive work. It is extremely difficult to hit an aeroplane with any gun we now have.

"The British have developed a plane to carry a torpedo. If we had in our fleet ships equipped to carry 15 planes fitted with torpedoes, there is no question that if we could get into close proximity to the enemy's fleet we could operate very successfully, especially against battleships."

When we reflect on the power and size of the coming airplane, especially in the light of the Navy's cross-Atlantic flight, the effect of this invention on naval warfare of the future promises to become revolutionary.

V

ADVENTURES OF TRANSPORTS IN THE WAR ZONE

THERE is nothing in the history of the American Navy that, as a single achievement, surpasses the transport of an army of two million to France, which was accomplished

by Vice Admiral Gleaves and his Cruiser and Transport Force. Regarded as impossible by the enemy and by many in the councils of the Allies as well, the great undertaking was successfully carried through at the critical time when the cause of civilization depended

Thanks to the skill and efficiency of the Navy not a single one of our transports bound for France was sunk under American convoy. Nor should the fact that the *Tuscania* went down under British convoy be held to reflect on the work of our ally; it can be set down as



© E. Muller, Jr.

The Atlantic Fleet Steaming on the Line

Our navy took part in no great battle during the war—there was no Zeebrugge raid or Jutland for us—but the vital task of convoying transports and supply ships was undertaken and efficiently carried out.

on the arrival of the Americans in force before it was too late. Indeed the contribution of the Navy in this achievement is one of the most striking examples in history of the weight of sea power. As a major operation of the first magnitude, it is discussed in Part I; here, however, space may be given to some of the incidents of the transport service in the war zone.

a case of ill chance. Certainly the British destroyers showed the utmost gallantry in their work of rescue.

When the transports returned westward, almost empty, they did not have the same protection as the loaded ones going eastward; unfortunately, the supply of cruisers and destroyers was not enough. Hence some losses were sustained on the return trip. On Octo-

ber 17, 1917, the *Antilles* was sent down with the loss of 67 lives. Ten days later the *Finland* was torpedoed, but was able to make her way back to her port in France. On May 31, 1918, the *President Lincoln* was sunk with the loss of 27, and on the first of the following July the *Covington* was torpedoed and went down with the loss of six lives, after a splendid effort had been made to tow her back to port. On September 5th, the *Mount Vernon* was torpedoed but was able to get back to Brest.

THE LOSS OF THE ANTILLES

Of the stories of these transports we shall give two, those of the *Antilles* and the *President Lincoln*.

"We lost the *Antilles* on October 17, 1917, two days out from Quiberon Bay, France. She sank in just four and one-half minutes in latitude 48° 10' north, longitude 11° 20' west, or about 300 miles west of Quiberon Bay. Four of the guns' crew went down with her; 16 men of the United States Army; 45 of the ship's merchant crew, including 3 engineer officers, a civilian ambulance driver, who had been in the French Army, and 1 colored stevedore—67 in all.

"On October 15, 1917, we left Quiberon Bay, bound for America, with the transports *Henderson* and *Willehad* forming the convoy, and the *Corsair*, *Kanawha*, and *Alcedo* acting as escort; all followed a zigzag course, as we knew these waters to be infested with submarines.

"The second day out we were forced to reduce our speed to permit the *Willehad*, which had been feeling the effects of the heavy seas, to regain her place in formation. . . .

"In passing through the war zone or areas where enemy submarines are known to be operating, everyone is more or less on edge, and when fire was discovered early the following morning on the port side of the promenade deck, it had the effect of stimulating everyone on board to swift action. Some difficulty was experienced in locating the fire, as the ship was darkened and the passageway filled with smoke, but once located it was soon under control. I mention this only because I think the circumstances contributed to sharpen the wits of those on board, so that when the torpedo struck us action was immediate and, so far as humanly possible, it was effective.

"A half hour later, just after daylight, a

torpedo was sighted heading for us about two points abaft the port beam on a course of 45° with the keel. The torpedo was seen by the second officer on the bridge, the quartermaster and signalman on watch; by the first officer and first assistant engineer from the port side of the promenade deck, and by one of the guns' crews on watch aft. They estimated the distance from 400 feet to as many yards. Immediately on sighting the torpedo the helm was put 'hard over' in an attempt to dodge it, but before the ship began to swing the torpedo struck us near the after engine-room bulkhead on the port side. The explosion was terrific; the ship shivered from stem to stern, listing immediately to port. One of the lookouts in the main top, though protected by a canvas screen about 5 feet high, was thrown clear of this screen and killed on striking the hatch. This case is sighted as indicating the power of the 'whip' caused by the explosion. Guns were manned instantly in the hope of getting a shot at the enemy, but no submarine was seen.

18 CASUALTIES IN THE ENGINE ROOM

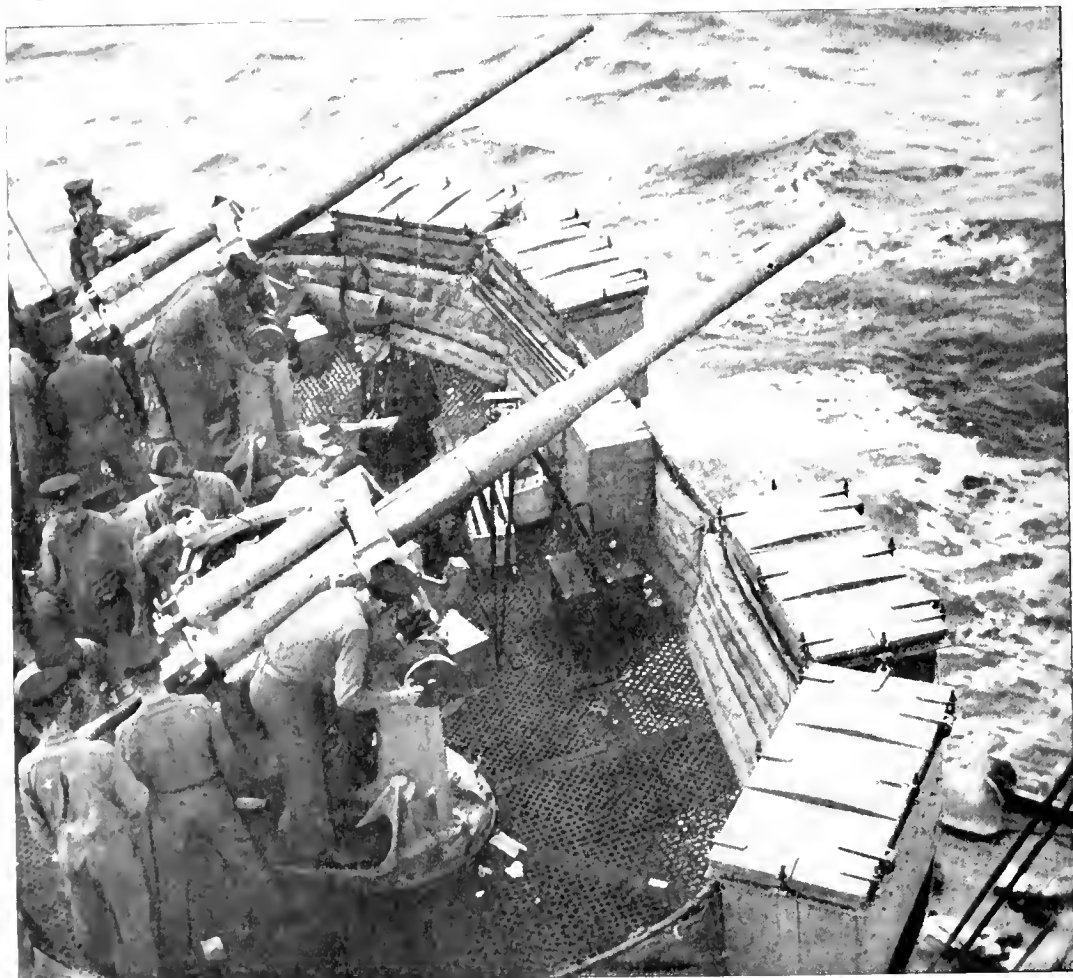
"The explosion wrecked everything in the engine room, including the ice machine and dynamo, and almost instantly flooded the engine room, fireroom, and No. 3 hold, which is just abaft the engine-room bulkhead. The engine room was filled with ammonia fumes and with the high-pressure gases from the torpedo, and it is believed that everyone on duty in the engine room was either instantly killed or disabled except one oiler. This man happened to be on the upper gratings at the time. He tried to escape through the engine-room door, which is near the level of the upper gratings, but found the door jammed, and the knob on his side blown off. Unable to force the door, and finding he was being overcome by the gases and ammonia fumes, he managed to escape through the engine-room skylight just as the ship was going under. Within a few seconds after the explosion the water was over the crossheads of the main engines, which were still turning over slowly. Of the 21 men on duty in the engine room and firerooms only 3 managed to escape. Besides the oiler, two firemen managed to escape through a fireroom ventilator. The fact that the engines could not be maneuvered and the headway of the ship checked added to the difficulty of abandoning ship.

"Just as the torpedo struck us I was on the way to the pilot house from the scene of fire. Before I could reach the bridge the officer of the deck had sounded the submarine alarm, and

I immediately sounded the signal for 'Abandon ship.' The officer on watch, quartermaster, and signalman went to their boats. Radio Electrician Watson being relieved by Radio Electrician Ausburne in the radio room, reported on the bridge for instructions. I sent an order to get out an 'S. O. S.' signal. Radio Electrician

ship, due to the fact that the engine-room personnel was put out of action by the explosion; the rough sea at the time; the fact that the ship listed heavily; and that one boat was destroyed by the explosion.

"When there was no one left in sight on the decks I went aft on the saloon deck, where



An Anti-Aircraft Battery Manned by Marines

This American man-of-war is operating with the British Grand Fleet; the boxes hanging over the side contain ammunition.

Watson, who was lost, remained with me on the bridge until the guns' crews forward were ordered to save themselves. He was wearing a life jacket and was on his way to his boat when I last saw him.

"That only 4 boats out of 10 succeeded in getting clear of the ship was due to several causes—the short time the ship remained afloat after being torpedoed; the headway left on the

several men were struggling in the water in the vicinity of No. 5 boat and making no attempt to swim away from the side of the ship. I thought perhaps these men could be induced to get clear of the ship, as it was feared the suction would carry them down. By the time that point was reached, however, the ship, being at an angle with the horizontal of about 45 degrees, started to upend and go down, listing

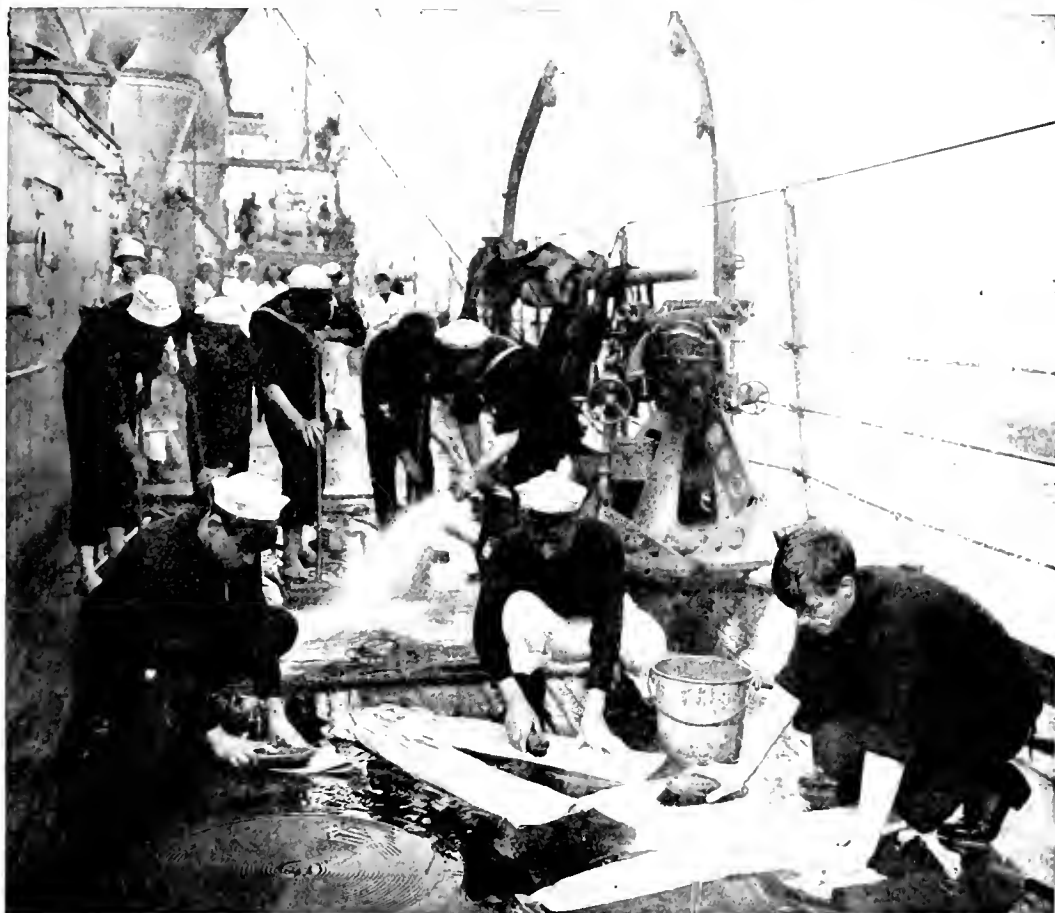
heavily to port. This motion threw me across the deck where I was washed overboard. The ship went down vertically. The suction effect was hardly noticeable.

THE WORK OF RESCUE

"The behavior of the naval personnel throughout was equal to the best traditions of the

tion, told McMahon to get his life preserver on, saying, as he left to take his station at the radio key, 'Good-bye, Mac.' McMahon, later finding the radio room locked and seeing the ship was sinking, tried to get Ausburne out, but failed.

"As soon as the *Henderson* saw what was wrong she turned to starboard and made a thick smoke screen which completely hid her



© E. Muller, Jr.

Scrubbing Clothes in the Morning Watch

A sailor learns to do many things—not least among them to wash and mend his clothes.

service. The two forward guns' crews, in charge of Lieut. Tisdale, remained at their gun stations while the ship went down, and made no move to leave their stations until ordered to save themselves. Radio Electrician Ausburne went down with the ship while at his station in the radio room. When the ship was struck Ausburne and McMahon were asleep in adjacent bunks opposite the radio room. Ausburne, realizing the seriousness of the situa-

tion, told McMahon to get his life preserver on, saying, as he left to take his station at the radio key, 'Good-bye, Mac.' McMahon, later finding the radio room locked and seeing the ship was sinking, tried to get Ausburne out, but failed. "As soon as the *Henderson* saw what was wrong she turned to starboard and made a thick smoke screen which completely hid her

from view. The *Willard* turned to port and made off at her best speed. The *Corsair* and *Alcedo* returned to the scene of the accident and circled for about two hours, when the *Alcedo* began the rescue of the survivors, the *Corsair* continuing to look for the submarine. The total number of persons on board the *Antilles* was 234, the *Corsair* rescuing 50 and the *Alcedo* 117. Too much credit can not be given to the officers and men of the *Corsair* and *Alcedo* for

their rescue work and for their whole-heartedness and generosity in succoring the needs of the survivors. The work of the medical officers attached to the above vessels was worthy of highest praise.

"An instance comes back which indicates the coolness of the guns' crews. One member was rescued from the top of an ammunition box which by some means had floated clear and in an upright position. When this young man saw the *Corsair* standing down to pick him up he semaphored not to come too close as the box on which he was sitting contained live ammunition."

Both illustrate vividly the conditions in the war zone, the effect of torpedo attack, and the splendid spirit of officers and men. The story of the *Antilles* here given is taken from the Secretary of the Navy's Report. Commander Ghent, U. S. N., the senior officer on board, reported.

THE LOSS OF THE *PRESIDENT LINCOLN*

The following is the story of the sinking of the *President Lincoln*, as told by Chaplain G. C. Whimsett, U. S. Navy, one of the survivors:

"On the morning of May 30, 1918, the *President Lincoln*, on her fifth return trip, was steaming at full speed in company with the *Ryndam*, *Susquehanna* and *Antigone*. At about 8:57 A.M., when we were commencing to zigzag, a torpedo wake was sighted about 600 yards to the port beam, by persons on the port side of the ship, several of whom called to the bridge. The order 'Hard right rudder' was given. Before the ship could respond to the motion of the steersman, an explosion took place, which shook and raised the ship out of the water. Before the concussion of the explosion was over, another took place, seemingly in the same part of the ship.

"General Alarm was sounded throughout the ship and all hastened to their 'Abandon Ship' stations. Before most of them could get there, however, still a third explosion took place, well aft of the first two and on the port side. It was afterwards learned that the first two torpedoes had hit the ship just aft of the bridge, one about on the level of the water and the other about 15 feet below, both hitting in the coal bunkers, at which place men were engaged at the time in shifting coal from one bunker to another. The third explosion hit just aft of the engine room.

"Immediately following these explosions, the ship took a heavy list to port. All guns began firing, for the purpose of keeping the submarine below, although no periscope was sighted. The other three ships which accompanied us speeded away, soon disappearing over the horizon.

"Slowly the ship righted herself on an even keel, though gradually sinking, and it was thought for a time that she might be saved. Therefore, word was not passed to abandon the ship, but to stand by prepared.

"In the meantime, all safety valves had been opened; working parties had gone throughout the ship to estimate the damage; men wounded in the explosions had been brought to the sick bay and given what treatment was possible; and the army sick, of whom we had 120, were prepared for the open boats. At 9:10 the Captain, by a motion of his hand, signaled all to abandon ship.

"The ship was equipped with fourteen lifeboats, two of which were destroyed in the explosion, and two were smashed in lowering. The other ten were safely lowered and shoved off, taking with them all sick and all army passengers. The next step was the throwing over of the life-rafts, which was hurriedly done, then the jumping into the water of the men who remained on board. This was all accomplished within five or six minutes at the most. All the time the forward guns kept up an incessant firing, the after guns by this time being under water.

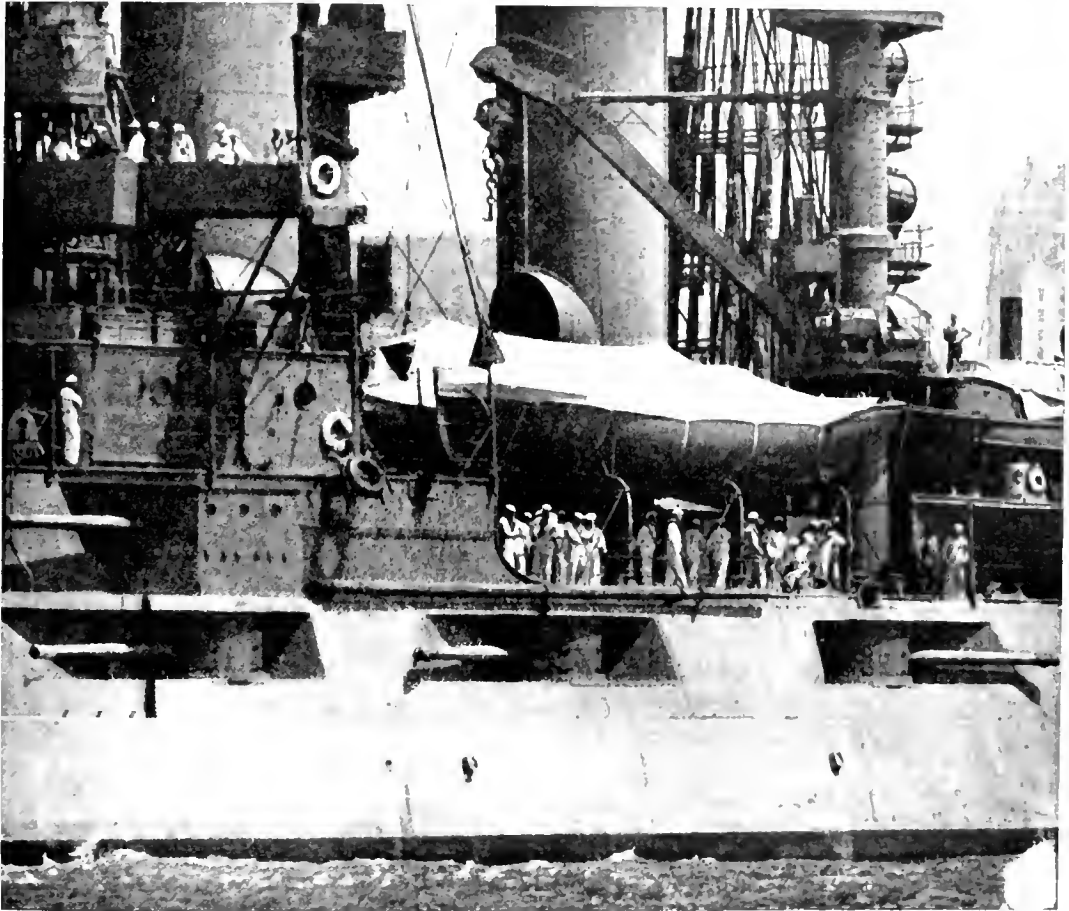
"At 9:15 the ship gave a sudden lurch and sank, stern first, just 18 minutes after she was first hit.

THE GERMAN "SUB" APPEARS

"The men who had jumped in the water climbed on rafts and the boats took on their full capacity. At about 10 o'clock when every one was feeling more or less comfortable and waiting for some one to come and pick us up, we sighted what was thought to be a sail on the horizon. We watched it, as it came closer, and finally made it out to be a submarine. It was hard to express the feeling that existed upon discovering this submarine. Every one had settled back, feeling that the worst was over, and tranquilly waiting to be rescued. To have this 'sea-louse' come upon us, to add to our misery, was enough to 'get any one's goat.' As the submarine came closer we saw that she had on her bow a large gun, trained on us. There was also a smaller gun on her stern. These guns were variously estimated to be of 6 and

4-inch caliber, respectively. The submarine circled us several times, with the guns trained on us, and the gun crews were continuously changing the loads, as if to tantalize and intimidate us. The submarine commander called out, in plain English, for our Captain, but fortunately the Captain and other officers had removed their blouses and substituted sailors' jumpers, the

below. These men later stated that they had been given coffee, and one of them said that he had seen on the submarine's bulkhead a list of five ships, namely: *The Leviathan*, *Aqamemnon*, *Mount Vernon*, *President Grant* and *President Lincoln*, all ex-German passenger liners. As he was looking at this list, a German sailor scratched off the name of the *Presi-*



© E. Muller, Jr.

The Battleship *Utah*

A close view of part of one side of this great ship; of war vessels of this class, the United States had 42 in 1917.

officers in the boats taking the oars. The answer was given back that the Captain had been last seen on the ship.

"For two long, anxious hours the submarine remained with us, continuously searching for the Captain, perhaps with the object of sinking another ship which might be coming up to our aid.

"At about 12 o'clock the submarine took aboard two of the sailors, leading them both

dent Lincoln and said, 'Now we have but four more to get.' Needless to say, that list was never changed.

"After the return of these men, Lieut. Isaacs was taken aboard the submarine and retained as a prisoner. This being done, the submarine left us, remaining on the surface, as she proceeded on her way. At about 3:30 in the afternoon, she paid us another unsociable visit, repeating her maneuvers of circling and loading

and training guns on us until 5:30 when she left us for good.

"As dusk came, it was seen that the rafts and boats were by this time widely scattered, and it was evident that if something were not done by morning, they would be completely separated. Therefore, the Executive Officer of the ship took charge of the ten lifeboats, tied all rafts

it to be a destroyer, the U. S. S. *Warrington*. After about fourteen long hours, which seemed weeks, of tumbling and floating around in the vast ocean, the sight of this destroyer was enough to make us want to rise up from our cramped-up positions and give one long, tremendous, heart-rending, gladsome cheer, but such a demonstration would have interfered with

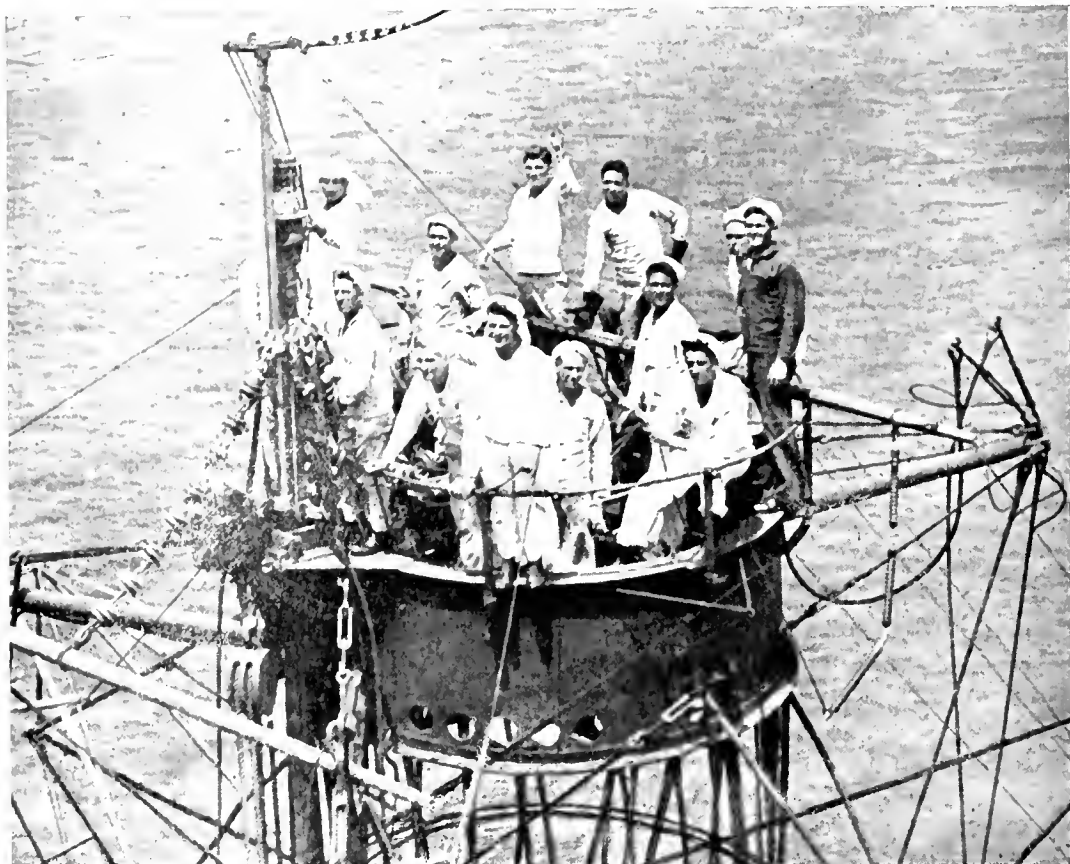


Photo by Curtiss.

Courtesy of Leshe's Weekly.

The Ever Wakeful Eye of the Navy

At all hours of the day or night aboard ship, one may hear the hail of the lookout. It may come from the masthead or "crow's nest," from the bridge, from the port side or the starboard, depending on the elements, whether at sea or in port, in battle or in practice.

together, and they in turn were tied to the lifeboats. This task was not completed until about 9 o'clock. The leading boat lit a kerosene lamp and all stood by and patiently waited.

U. S. DESTROYERS TO THE RESCUE

"At 11 o'clock rockets were sighted in the distance and then a message was flashed from the destroyer for such it proved to be—to extinguish all our lights. Coming closer, we saw

the signaling and conversation with the destroyer. It signaled us that it would take aboard our sick, and within the next hour 550 of the more than 700 survivors were transferred to the *Warrington*. Those who remained waited patiently until 3 o'clock in the morning, when the second destroyer, the U. S. S. *Smith*, arrived and took us all aboard. Both destroyers waited until morning to see if any occupants of rafts or boats had been overlooked, and finding none, at daybreak proceeded

to Brest, arriving there shortly after noon on June 2nd. Here the entire crew and officers were placed on board the U. S. S. *Great Northern* and returned to the States, there to be refitted and returned to sea again.

"Four officers and twenty-three men were lost when the *President Lincoln* was torpedoed and sunk."

VI

TIRELESS WORK OF THE DESTROYERS

SINCE the submarine's most effective enemy proved to be the destroyer, the naval men who served aboard this type of vessel had every reason for their boast that the destroyer was the queen of the fleet. Queen she was in importance, but when it came to the amount of and variety of service she was called on to do she was the hardest driven maid of all work imaginable. Hunting the submarine and guarding the convoy in all weathers and for long, sleepless days and nights, was no dress parade affair. As a rule, her speed and nimbleness made the U-boat take cover, but there were times when darkness and the chance favorable position permitted the submarine to turn and strike her enemy a mortal blow. It was a risk constantly run, and our own destroyers did not escape.

THE STORY OF THE U. S. S. *CASSIN*

The following is the story of the *Cassin*, as it appears in the Secretary of the Navy's Report:

"On October 15, 1917, the U. S. destroyer *Cassin* was patrolling off the south coast of Ireland; when about 20 miles south of Mine Head, at 1.30 p. m., a submarine was sighted by the lookout aloft 4 or 5 miles away, about two points on the port bow. The submarine at this time was awash and was made out by officers of the watch and the quartermaster of the watch, but three minutes later submerged.

"The *Cassin*, which was making 15 knots, continued on its course until near the position where the submarine had disappeared. When last seen the submarine was heading in a southeasterly direction, and when the destroyer reached the point of disappearance the course was changed, as it was thought the vessel would make a decided change of course after sub-

merging. At this time the commanding officer, the executive officer, engineer officer, officer of the watch, and the junior watch officer were all on the bridge searching for the submarine.

"At about 1.57 p. m. the commanding officer sighted a torpedo apparently shortly after it had been fired, running near the surface and in a direction that was estimated would make a hit either in the engine or fire room. When first seen the torpedo was between three and four hundred yards from the ship, and the wake could be followed on the other side for about 400 yards. The torpedo was running at high speed, at least 35 knots. The *Cassin* was maneuvering to dodge the torpedo, double emergency full speed ahead having been signaled from the engine room and the rudder put hard left as soon as the torpedo was sighted. It looked for the moment as though the torpedo would pass astern. When about 15 or 20 feet away the torpedo porpoised, completely leaving the water and sheering to the left. Before again taking the water the torpedo hit the ship well aft on the port side about frame 163 and above the water line. Almost immediately after the explosion of the torpedo the depth charges, located on the stern and ready for firing, exploded. There were two distinct explosions in quick succession after the torpedo hit.

AN HEROIC GUNNER'S MATE

"But one life was lost. Osmond K. Ingram, gunner's mate first class, was cleaning the muzzle of No. 4 gun, target practice being just over when the attack occurred. With rare presence of mind, realizing that the torpedo was about to strike the part of the ship where the depth charges were stored and that the setting off of these explosives might sink the ship, Ingram, immediately seeing the danger, ran aft to strip these charges and throw them overboard. He was blown to pieces when the torpedo struck. Thus Ingram sacrificed his life in performing a duty which he believed would save his ship and the lives of the officers and men on board.

"Nine members of the crew received minor injuries.

"After the ship was hit, the crew was kept at general quarters.

"The executive officer and engineer officer inspected the parts of the ship that were damaged, and those adjacent to the damage. It was found that the engine and fire rooms and after magazine were intact and that the engines could be worked; but that the ship could not be steered, the rudder having been blown off and the stern blown to starboard. The ship continued to turn

to starboard in a circle. In an effort to put the ship on a course by the use of the engines, something carried away which put the starboard engine out of commission. The port engine was kept going at slow speed. The ship, being absolutely unmanageable, sometimes turned in a circle and at times held an approximate course for several minutes.

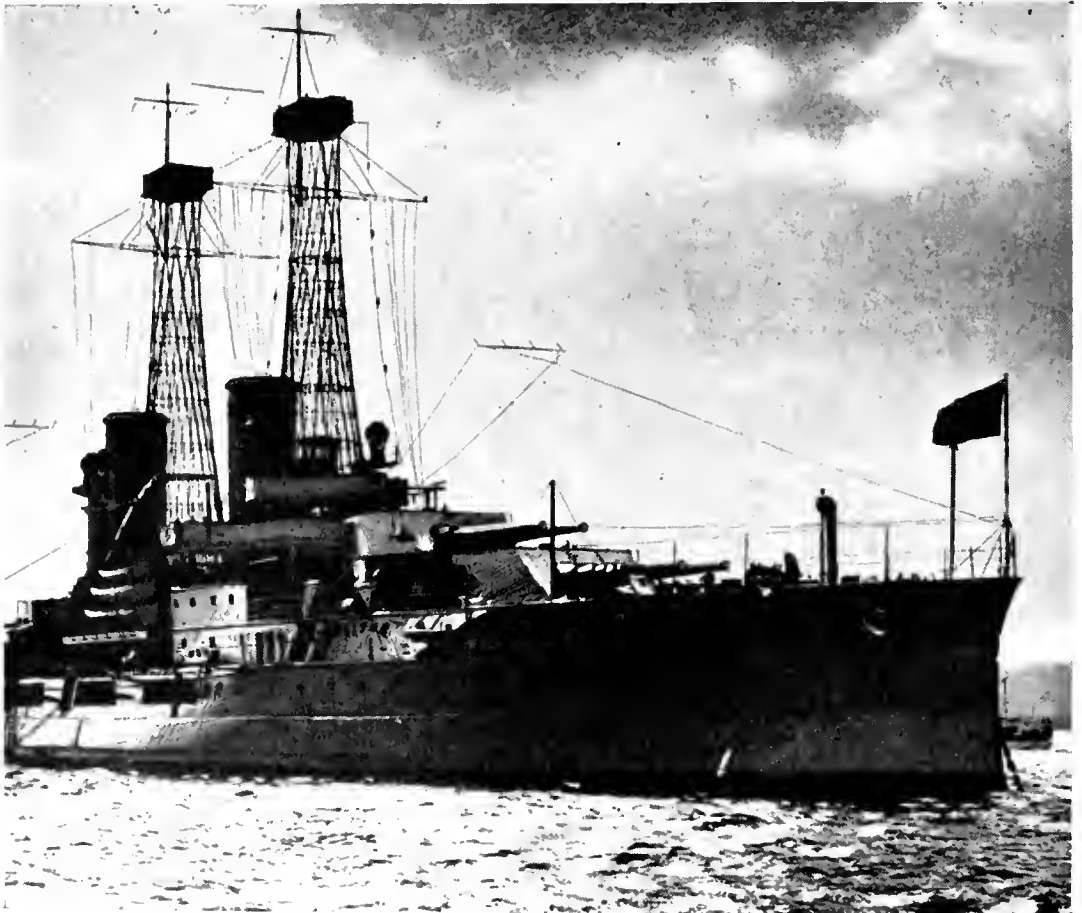
"At about 2.30 p. m., when we were in approximately the same position as when torpedoed, a submarine conning tower was sighted on port beam, distant about 1,500 yards, ship still circling under port engine. Opened fire with No. 2 gun, firing four rounds. Submarine submerged and was not seen again. Two shots came very close to submarine.

"About 35 feet of the stern was blown off or completely ruptured. The after living compartments and after storerooms are completely wrecked or gone, and all stores and clothing from these parts of the ship are gone or ruined. About 45 members of the crew, including the chief petty officers, lost practically everything but the clothes they had on.

"At the time of the explosion there were a number of men in the after compartments. How they managed to escape is beyond explanation.

"The officers and crew behaved splendidly. There was no excitement. The men went to their stations quietly and remained there all night, except when called away to handle lines.

"From the statement of all the officers it is



Courtesy of Leslie's Weekly.

Between the Land and the Open Sea—The First Line of Defense

Silhouetted against the evening sky, the *North Dakota* lies at anchor. The afterglow of the setting sun throws into bright relief the strong, yet graceful lines of the giant man-of-war. Behind it, as if under its protection, a continent stretches back to another ocean where sister ships keep their constant watch.

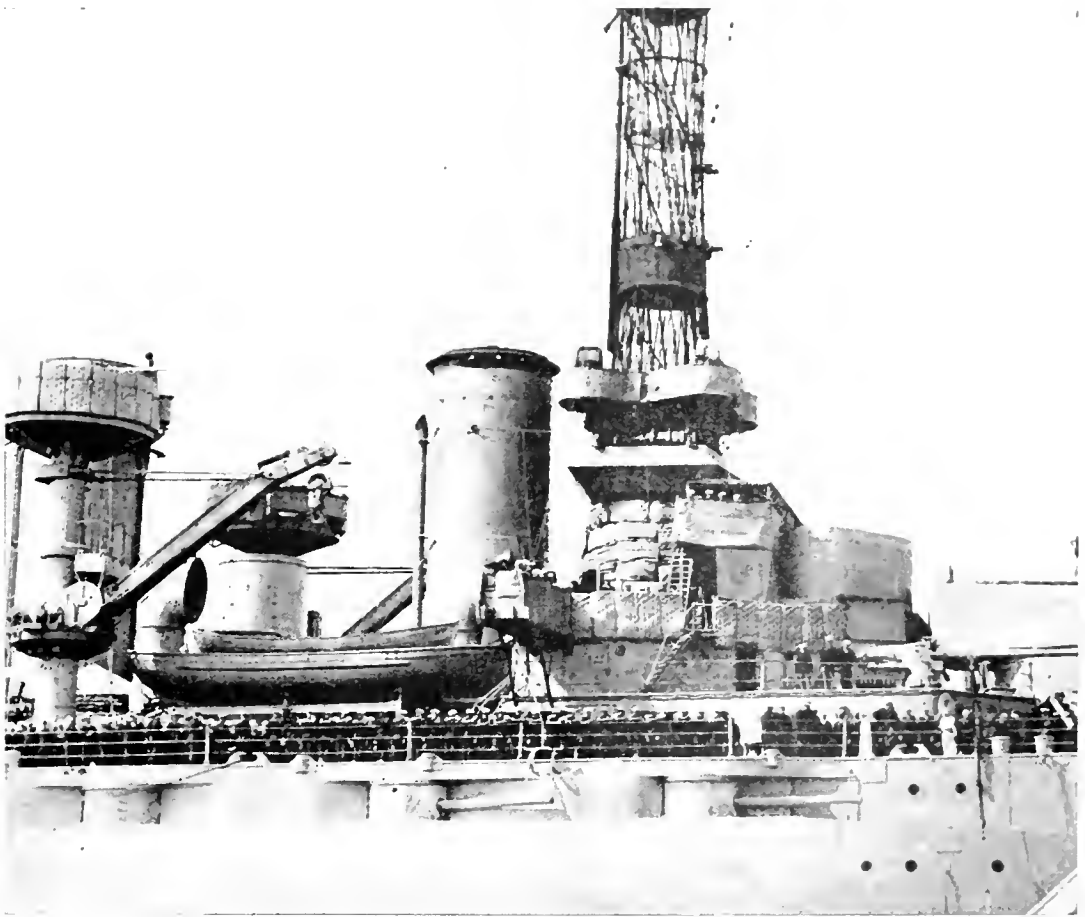


Photo by Hunter.

Ready to Welcome King George

Officers and sailors on the battleship *New York*, standing at attention while awaiting the Royal visitor.

evident that luck favored the submarine. The destroyer probably would have escaped being hit had not the torpedo broached twice and turned decidedly to the left both times—in other words, failed to function properly.

"The equivalent of 850 pounds of TNT is estimated to have exploded in and upon the *Cassin's* fantail; this includes the charges of the torpedo and of both depth mines. No. 4 gun, blown overboard, left the ship to port, although that was the side which the torpedo hit. The gun went over at a point well forward of her mount. The mass of the wreckage, however, went to starboard. Explosion of the depth charges, rather than that of the torpedo outward or in throwback, supposedly effected this. About 5 seconds elapsed between the torpedo's detonation and those of the mines.

They probably went off close together, for accounts vary as to whether there were in all two or three explosions.

FIREMAN KRUSE'S MIRACULOUS ESCAPE

"The miracle by which the twenty-odd men in the three wrecked after living compartments escaped with only minor injuries is most striking in the case of F. W. Kruse, fireman, first class. He was asleep in his bunk on the port side, only a few feet forward of the torpedo's point of impact into the storerooms. Four frames, 84 inches of side, were disrupted immediately alongside his body. He made his way through each of the three compartments, climbed the ladder to the main deck, in a state of unconsciousness, and did not regain his mind

until he had gone forward as far as No. 4 stack. His duty was in No. 2 fireroom, which it is believed his subconsciousness was urging him toward."

THE JACOB JONES

A greater disaster, involving the loss of the destroyer and a large number of her men, was

the U. S. S. *Jacob Jones* was struck on the starboard side by a torpedo from an enemy submarine. The ship was one of six of an escorting group which were returning independently from off Brest to Queenstown. All other ships of the group were out of sight ahead.

"I was in the chart house and heard some one call out 'Torpedo!' I jumped at once to the bridge, and on the way up saw the torpedo about



© Central News.

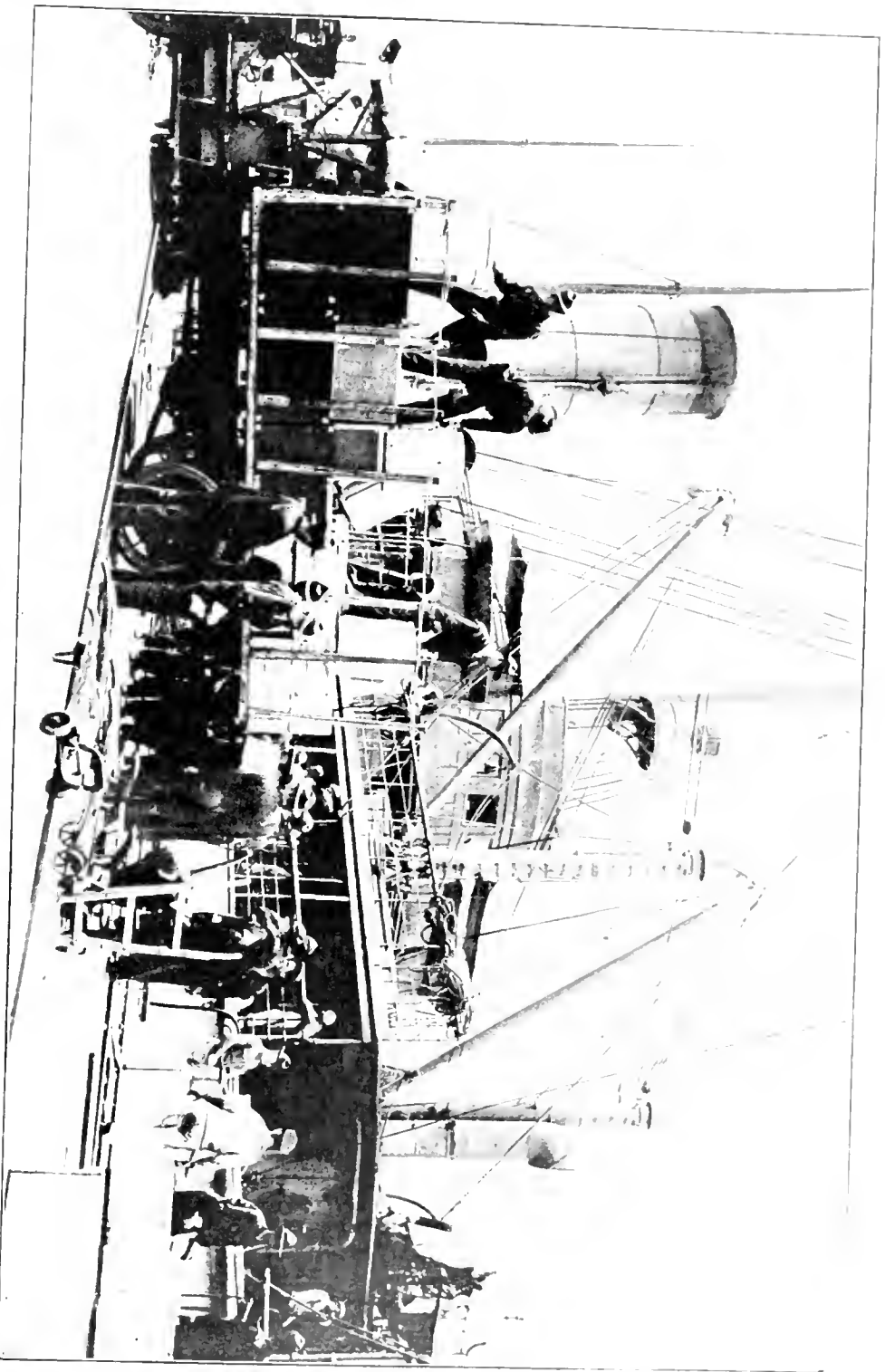
King George Visits an American Battleship

In the photograph King George is inspecting one of the guns mounted on the ship's deck to repel submarine attacks.

the sinking of the *Jacob Jones*. This story, even more than the preceding one, reveals the magnificent spirit of officers and men. There follows part of the report of Lieut. Commander David W. Bagley:

"At 4.21 p. m. on December 6, 1917, in latitude 49—23 north, longitude 6—13 west, clear weather, smooth sea, speed 13 knots, zigzagging,

800 yards from the ship approaching from about one point abaft the starboard beam headed for a point about midships, making a perfectly straight surface run (alternately broaching and submerging to apparently 4 or 5 feet) at an estimated speed of at least 40 knots. No periscope was sighted. When I reached the bridge I found that the officer of the deck had already put the rudder hard left and rung up emergency



Loading Supplies for the Front

Committee of Public Information.

No army can live without food and the hundreds of other things that make a fighting force efficient. From America came everything from cigarettes to locomotives, from 6-inch guns to army mules, to supply the men at the front and behind it. Between June, 1917, and April, 1919, the Army shipped 7,452,000 tons of cargo from this side.

speed on the engine-room telegraph. The ship had already begun to swing to the left. I personally rang up emergency speed again and then turned to watch the torpedo. The executive officer, Lieut. Norman Scott, left the chart house just ahead of me, saw the torpedo immediately on getting outside the door, and estimates that the torpedo when he sighted it was 1,000 yards away, approaching from one point, or slightly less, abaft the beam and making exceedingly high speed.

"After seeing the torpedo and realizing the straight run, line of approach, and high speed it was making, I was convinced that it was impossible to maneuver to avoid it. Lieut. (Junior Grade) S. F. Kalk was officer of the deck at the time, and I consider that he took correct and especially prompt measures in maneuvering to avoid the torpedo. Lieut. Kalk was a very able officer, calm and collected in emergency. He had been attached to the ship for about two months and had shown special aptitude. His action in this emergency entirely justified my confidence in him. I deeply regret to state that he was lost as a result of the torpedoing of the ship, dying of exposure on one of the rafts.

"The torpedo broached and jumped clear of the water at a short distance from the ship, submerged about 50 or 60 feet from the ship, and struck approximately 3 feet below the water line in the fuel-oil tank between the auxiliary room and the after crew space. The ship settled aft immediately after being torpedoed to a point at which the deck just forward of the after deck house was awash, and then more gradually until the deck abreast the engine-room hatch was awash. A man on watch in the engine room, D. R. Carter, oiler, attempted to close the water-tight door between the auxiliary room and the engine room, but was unable to do so against the pressure of water from the auxiliary room.

"The deck over the forward part of the after crew space and over the fuel-oil tank just forward of it was blown clear for a space athwartships of about 20 feet from starboard to port, and the auxiliary room wrecked. The starboard after torpedo tube was blown into the air. No fuel oil ignited and, apparently, no ammunition exploded. The depth charges in the chutes aft were set on ready and exploded after the stern sank. It was impossible to get to them to set them on safe as they were under water. Immediately the ship was torpedoed, Lieut. J. K. Richards, the gunnery officer, rushed aft to attempt to set the charges on 'safe,' but was unable to get further aft than the after deck house.

"As soon as the torpedo struck I attempted to send out an 'S.O.S.' message by radio, but the mainmast was carried away, antennae falling, and all electric power had failed. I then tried to have the gun-sight lighting batteries connected up in an effort to send out a low-power message with them, but it was at once evident that this would not be practicable before the ship sank. There was no other vessel in sight, and it was therefore impossible to get through a distress signal of any kind.

"Immediately after the ship was torpedoed every effort was made to get rafts and boats launched. Also the circular life belts from the bridge and several splinter mats from the outside of the bridge were cut adrift and afterwards proved very useful in holding men up until they could be got to the rafts. Weighted confidential publications were thrown over the side. There was no time to destroy other confidential matter, but it went down with the ship.

"The ship sank about 4:29 p. m. (about eight minutes after being torpedoed). As I saw her settling rapidly, I ran along the deck and ordered everybody I saw to jump overboard. At this time most of those not killed by the explosion had got clear of the ship and were on rafts or wreckage. Some, however, were swimming and a few appeared to be about a ship's length astern of the ship, at some distance from the rafts, probably having jumped overboard very soon after the ship was struck.

"Before the ship sank two shots were fired from No. 4 gun with the hope of attracting attention of some near-by ship. As the ship began sinking I jumped overboard. The ship sank stern first and twisted slowly through nearly 180 degrees as she swung upright. From this nearly vertical position, bow in the air to about the forward funnel, she went straight down. Before the ship reached the vertical position the depth charges exploded, and I believe them to have caused the death of a number of men. They also partially paralyzed, stunned, or dazed a number of others, including Lieut. Kalk and myself and several men, some of whom are still disabled but recovering.

"Immediate efforts were made to get all survivors on the rafts and then get rafts and boats together. Three rafts were launched before the ship sank and one floated off when she sank. The motor dory, hull undamaged but engine out of commission, also floated off, and the punt and wherry also floated clear. The punt was wrecked beyond usefulness, and the wherry was damaged and leaking badly, but was of considerable use in getting men to the rafts. The whaleboat was launched but capsized soon af-

terwards, having been damaged by the explosion of the depth charges. The motor sailer did not float clear, but went down with the ship.

"About 15 or 20 minutes after the ship sank the submarine appeared on the surface about 2 or 3 miles to the westward of the rafts, and gradually approached until about 800 to 1,000 yards from the ship, where it stopped and was seen to pick up one unidentified man from the water. The submarine then submerged and was not seen again.

"I was picked up by the motor dory and at once began to make arrangements to try to reach

of the wind, the dory was picked up about 1 p. m., 7 December, by a small patrol vessel about 6 miles south of St. Marys. Commander Randal, R. N. R., Senior Naval Officer, Scilly Isles, informed me that the other survivors had been rescued.

"One small raft (which had been separated from the others from the first) was picked up by the S. S. *Catalina* at 8 p. m., 6 December. After a most trying experience through the night, the remaining survivors were picked up by the H. M. S. *Camellia*, at 8.30 a. m., 7 December.

"I deeply regret to state that out of a total of 7 officers and 103 men on board at the time



© Brown Bros.

The Surrender of an Undersea Pirate

This submarine, *U-58*, was captured by the U. S. destroyer *Fanning*, on November 18, 1917, but was scuttled by her crew and sunk before she could be taken over. Her crew were rescued.

the Scillies in that boat in order to get assistance to those on the rafts. All the survivors then in sight were collected and I gave orders to Lieut. Richards to keep them together. Lieut. Scott, the navigating officer, had fixed the ship's position a few minutes before the explosion and both he and I knew accurately the course to be steered. I kept Lieut. Scott to assist me and four men who were in good condition in the boat to man the oars, the engine being out of commission. With the exception of some emergency rations and half a bucket of water, all provisions, including medical kit, were taken from the dory and left on the rafts. There was no apparatus of any kind which could be used for night signaling.

"After a very trying trip during which it was necessary to steer by stars and by the direction

of the torpedoing, 2 officers and 64 men died in the performance of duty.

"The behavior of officers and men under the exceptionally hard conditions is worthy of the highest praise."

THE CAPTURE OF THE *U-58*

As the most effective means of destroying the U-boat was the depth charge, and the result of a well-placed depth charge was to send the submarine to the bottom, there was little in the way of surrendering and practically none in the way of bringing prizes back to port. Commanders made their report on a destroyed U-boat on the basis of the amount of oil and wreckage that came to the surface.



Sailors on the United States Battleship *Florida*

© E. Muller, Jr.

Above them are two of the 12-inch rifles that make up the primary batteries of most of our battleships. Some of the newer vessels have 14-inch guns and even heavier ones are projected. When the break with Germany came the battleship fleet was basing at Guantanamo, Cuba, where winter practice was being held, under command of Admiral Mayo.

However, on the 18th of November, 1917, the destroyer *Fanning*, assisted by the destroyer *Nicholson*, succeeded in the rare feat of bringing a damaged submarine to the surface and taking its surrender. On account of the treachery of her crew in opening her valves after surrender, the captors were unable to bring her into port as a prize. The story of the capture is told by the commanding officer of the *Fanning*. Commander A. S. Carpenter, U. S. N., in his report to the Commanding Officer of our forces in European waters, Vice Admiral Sims, says:

"At about 4.10 p. m., November 17, 1917, while escorting a convoy, a finger periscope about

1½ inches in diameter and 1 foot above water was sighted 3 points on the port bow, distance about 400 yards, and heading across the bow at about 2 knots.

"The *Fanning* was swinging with left rudder, speed about 15 knots, into position covering left rear flank of convoy, about 1,000 yards from same. The *Nicholson* was on starboard bow standing down from ahead.

"The rudder was put hard left and speed increased to 20 knots, working up rapidly to full power. The periscope disappeared and when the ship had turned about 30 degrees the rudder was righted to bring ship in position for dropping a depth charge, which was dropped at about 4.15 p. m., slightly ahead of the estimated posi-

tion of submarine. The ship then continued to turn with full left rudder.

"The *Nicholson* changed course to right, turned, and headed for the spot where the depth charge had been dropped, and at about the time her turn was completed the conning tower of the submarine came to the surface between this

the stern at an angle of about 30 degrees, and was apparently making about two knots. She righted herself, and seemed to increase speed to about five knots, somewhat down by the head. As the *Nicholson* cleared, the *Fanning* headed for the submarine and opened fire with the bow gun, firing three shots. (The Commanding Offi-



© International Film Co.

At the Golden Gate

California's naval militiamen bade farewell to San Francisco on April 15, 1917, and went into active service off the Pacific coast, a thousand strong and trained by practice cruises in the ways of the sea. New York, California, and Massachusetts led the states in number of naval militiamen.

ship and the convoy, and about 500 yards from the spot where the charge had been dropped, in a direction toward the convoy. The *Nicholson* headed for the submarine at full speed, and the *Fanning* turned into her (*Nicholson's*) wake to attack. The *Nicholson* dropped a depth charge alongside the submarine and turned to left, firing three shots from her stern gun while turning. The bow of the submarine then came up rapidly, and it was estimated she was down by

cer of the submarine later stated that no gun hits were made.) After the third shot, the crew of the submarine all came on deck and held up their hands, and the submarine surrendered at 4.28 p. m.

"The *Fanning* and the *Nicholson* circled, keeping the batteries trained on the submarine. After circling twice the *Fanning* on orders from the *Nicholson* went alongside at 4.32 p. m., to pick up prisoners. A line was gotten to the

submarine, but apparently at this time she was scuttled, as two of her crew were seen to disappear below through the conning tower hatch, remaining below for about one minute; until this time the crew had made no effort to leave her deck. At 4:36 p. m. she sank, the line was let go, and the crew of the submarine jumped into the water and swam to the *Fanning*. They were taken on board, heaving lines being used to assist in the rescue, and all were on board at 4:45 p. m. One of the submarine crew died on board the *Fanning*, having been hauled out of the water, and efforts to resuscitate having failed. All officers and the remainder of crew, except one man, were picked up, and made prisoners of war. The Commanding Officer of the submarine surrendered to the Commanding Officer of the *Fanning*, and gave parole for his officers while on board the *Fanning*. The crew was placed on the main deck aft under guard, and searched; officers were also searched before they gave their parole. It is believed that the remaining member of the crew jumped overboard before the *Fanning* went alongside, and was picked up by the *Nicholson*.

"From notebooks taken, life belts picked up, and statements of crew, the submarine was the S. M. U-58 which it was learned had been six days at sea.

"The Commanding Officer and officers of the U-58 informed Commanding Officer of the *Fanning* that the first depth charge (the one dropped by the *Fanning*) damaged his ship seriously, forcing him to come to surface, and that the second depth charge (the one dropped by the *Nicholson*) additionally damaged him. Later information from officers and crew of U-58 developed the fact that the depth charge dropped by the *Fanning* wrecked the motors, diving gear, and oil leads. She then sank to a depth of about two hundred feet and was entirely unmanageable. She blew tanks and was coming to the surface in a helpless and unmanageable condition, when the *Nicholson* dropped the depth charge. The officers reported that the inner hull of the submarine was intact, but that she was wrecked and helpless as stated above.

"While the prisoners were being taken on board, Chief Pharmacist's Mate Elzer Harwell, U. S. N., and Coxswain Francis G. Connor, N. N. V., jumped overboard in an effort to rescue a member of the crew of U-58 who was drowning. They managed to hold him up and get him on board the *Fanning*, but efforts to resuscitate him failed, and he died in a very few minutes. The Commanding Officer considers that the action of these two men is worthy of commendation."

VII

THE SUBMARINE PATROL

CLOSELY related to the destroyers in the war zone were the sub-chasers and converted yachts, which had the same risks to run and which had less hitting power and less seaworthiness, but which were served with the same splendid courage and devotion to duty. One of the most interesting adventures of this class of patrol boats happened to the sub-chaser No. 28.

This vessel was one of a group of 110-footers sent over to the French Government in January, 1918. She was hardly built for winter navigation of the Atlantic, and when a heavy gale came up she became separated from her convoy and disappeared. She had been given up for lost when, a month later, she appeared in the Azores creeping into port under a sail made of blankets. The storm had done everything to her except send her to the bottom, and how that fate was avoided is one of the marvels of the story. The following comes from the commanding officer's story as it appeared in the *Brooklyn Eagle*. It begins with the efforts made after the storm had damaged the engines:

"The machinists set to work to fix the engines, and on Wednesday, January 16, at midnight, the central engine started up. I set course east. There was nothing in sight. At 3 a. m. we again broke down. At 3:30 a. m. I saw the lights of two steamers to port on the horizon, headed east. I showed two red lights at the masthead and signaled to them with the blinker. They did not answer me and continued on their course to the east. I lost sight of them a few minutes later.

"At 11:50 a. m. I saw the mast of a scout-boat on the horizon to the northwest. Considering my boat to be in a critical condition by reason of the length of time it had been disabled and the near exhaustion of my lubricating-oil, I fired a salvo of six shots and hoisted the signal of distress. I obtained no answer and could see nothing more of them a few minutes later. At noon the center engine started up; course east. Nothing in sight. At 1 p. m. a new breakdown of the engine. The chief machinist, Faignou, reported to me that the lubricating-oil was all gone. Thereupon I used soap-suds and several greasy substances to replace the oil, but these gave bad results.

SALAD-OIL AND BUTTER AS LUBRICANTS

"I then gave all the salad-oil and butter for the lubrication of the engines. These latter gave very good results, but were not sufficient. There were about five gallons. At 5.40 p. m. the center engine started up; course east, nothing in sight.

"At 11.30 p. m. another and last breakdown

tress, drifting toward the southeast, at the mercy of the winds and sea, with no exact position.

"I remained in this condition until the 18th of February without getting help of any kind. I ordered a jury-lug rig to be got up, pumping the bilges all the time, putting out and taking in a sea-anchor when I thought it well to use it, sparing the drinking water as much as possible, rationing the crew to the lowest possible



Courtesy of Leslie's Weekly.

Bluejackets from the *North Carolina* Visit the Pyramids

The battleship was in Mediterranean waters during 1915, watching out for American interests in Turkey and she carried many refugees from that country to Egypt. Some of her crew took advantage of shore leave in the land of the Pharaohs to visit the Pyramids.

of the engine and burning out of the dynamo. The chief machinist reported to me that he would not be able to make the engines run any more. The radio would not work. It was impossible for me to call for help. There was nothing left me aboard but several pints of salad-oil which I used only for the lubrication of the auxiliary engine with which I pumped bilges when the state of the sea was such that I could not use the handy-billy (hand-pump).

"I found myself, therefore, in complete dis-

amount, in view of the probability of a long voyage, putting out and taking in the sails according to the condition of the weather and the direction of the wind, and endeavoring to make headway east by compass in an effort to reach the Azores.

"I sighted four steamers, of which three were very far away and making a course nearly parallel to mine, so that they did not approach very near to me. They were out of sight very quickly and probably did not see me

"On February 8, at 9.30 a. m., I saw the third steamer about four points to port and crossing our course not far away. The weather was fine, the sea very beautiful. I at once hoisted signals of distress and got out the life-boat, manned by two volunteers, and ordered it to get in the path of the steamer and speak to him, but when he arrived at a distance of about five miles and was bearing about two points forward of the port beam, the steamer changed course suddenly and put on all steam. I immediately fired a salvo of seven guns at intervals of one minute, in accordance with the rules for distress-signals, but he did not answer me and continued to run away. At 11.15 a. m. he disappeared over the horizon, heading about southwest.

"I had at this time a fore-and-aft mainsail, a staysail, and a kind of leg-of-mutton at the small foremast. At 11.20 I hoisted in the life-boat and continued to sail toward the east. I am certain that the steamer saw me clearly. I could not recognize her name or her nationality.

MADE PORT AFTER A MONTH OF ADVENTURES

"The conduct of the crew was marvelous throughout the voyage. They retained at all times their habitual calm; they never complained of the smallness of the ration which it was necessary for me to restrict them to, and thereby showed a grand spirit of sacrifice and self-denial.

"On February 18, at 6.30 a. m., I saw land one point on the port bow, bearing north 55 degrees east by compass. I headed over and took a sounding from time to time. At 11 a. m. I hoisted the signal 'YP'—'I require a tug.'

"At 3.25 the *Sin-Mac* took me in tow about 5 miles southwest of Fayal and brought me into the port of Horta.

"The winding of the dynamo armature was burned out in two places. The electric wiring was all very badly grounded. The ship needed to be calked and cleaned at the bottom. The depth-bomb rack and skids needed to be rebuilt, but the other damage was slight. Part of the crew's clothing was damaged by the water and dampness.

"The coal for the galley was all expended by January 26. The galley-fire was made from the wood of the broken mess-table and benches. I estimate that I might have held out for twenty days longer, but not more than that, because all the provisions and water would have been gone by that time."

VIII

PERILS OF THE CARGO CARRIERS

NOT all the heroism on the seas was reserved for the commissioned ships. The same perils were undergone by men who navigated the cargo ships that were so essential to the cause. The terrible fate of the *Florence H.* shows that in addition to the ordinary dangers, every cargo carrier ran the risk of destruction from within due to secret agents of the enemy. The following is from Mr. Kauffman's narrative:

"It was only shortly before the end of my nine months' stay in France that the horribly burned survivors of the American cargo steamer, the *Florence H.*, which was blown up near the coast of that country, were pronounced by their physicians to be in a condition permitting them to tell their stories of an event that cost so many lives and that proved a test, splendidly met, of the American Navy's best traditions. A formal French, and an informal American, naval inquiry were straightway made, and I was fortunate enough to have that inquiry thrown open to me. Because of the hitherto mostly concealed stories of heroism there elicited by the examinations, I want to tell something of the catastrophe involving them. That heroism has, so far, been unsurpassed, even in the records of this war, in which physical bravery is so common.

"Although only just now to be published in detail, the story of the *Florence H.*, which formerly flew the French flag, is soon told. A merchant ship, officered and manned by civilians, she carried an armed guard of twenty-two. In her four holds she had a cargo of several million dollars—many tons of steel plate and explosives, the latter packed in metal cases supported by wooden frames. She took on coal at Carney's Point, in the Delaware River, and then set sail for France. Off the French coast, she joined a convoy, which anchored close to shore, about a day's sail from our naval base, at close upon 9.30 of a spring evening. Witnesses agree that there was no powder on her hatches, and that these were kept securely closed after leaving Philadelphia.

"There were several ships in that convoy, and a guard of American destroyers, American patrol-boats, and two French craft. The sea was smooth, but the night dark. The *Florence H.* was the third boat in the column. Four men,

including the captain, none of whom was saved, were on watch or lookout. At 10.45 p. m., without any preliminary smoke being noticed, No. 2 hatch exploded. The deck rose in air, the starboard side was blown out. In about twenty minutes the *Florence II.*, settling by the head with a list to the ripped quarter, sank in a mass of flames. The water receiving her was so shallow that her stack and two masts are visible at low tide. Only thirty-two of the seventy-seven men aboard were saved. . . ."

To quote Captain Wilson, who commanded the escort:

"There was ejected upward for almost three hundred feet from that burning ship a mass of flaming powder-cases and wreckage, which spread out to leeward like several enormous rafts, so thick were they packed. In the midst of these jammed masses of wreckage, and for a considerable area all over the vicinity, numerous cases were exploding every second and shooting their flame and gases twenty feet in the air. These explosions resembled enormous blow-torches and made a whistling noise. Next, the fixed ammunition on deck began to explode, showing up like fireworks, and shortly afterward the guns went off. I could not believe that any living being had escaped from this burning furnace. . . ."

Nevertheless some had, but as they leaped into the water, many of them badly burned, they found themselves swimming in a sea of fire and exploding ammunition boxes. One of the survivors told his story to Mr. Kauffman:

"Percy D. West, of Edgartown, Massachusetts, had been serving as quartermaster and was awakened from his sleep in a cabin under the bridge, not by any explosion, but by the flames. 'I got into my trousers, and I had two sweaters on,' he said to me. 'I woke my cabin mate. I jerked open the door, and a blast of fire shot in. Then a back-draft blew that way, and I tried to drag my mate through the door; but he was kind of dazed and wouldn't come. I jumped through the flames and overboard. The next thing I knew I was floating in the water with a powder-cask under each arm.'"

Mr. Kauffman continues:

"The feet of many were burned because the deck was aflame, and the speed of the fire was fatal. 'By the time I got on deck,' Seaman L.

C. Johnson testified at the inquiry, the whole aft of the ship was afire—gun-platforms and all.' The Finnish boatswain, Carl Linder, was thrown from his bunk in darkness and staggered on deck; as he swam away the stern blew up. Water-tender Peter Drulle, bunking with three other men, found the four ports and four doors of their quarters jammed; he smashed one of the doors, plunged through flames to the deck, and reached the water as the ship sank. John B. Watson, the chief engineer, told the story with unconscious dramatic power:

"She just burned up and melted in about twenty minutes."

"It is almost impossible to describe the scene. The night's walls of blackness were pushed far aside by a blistering glare that was blindingly intense. Against that the convoy was silhouetted afloat on a sea that was little more than a lake of liquid fire, cluttered by burning wreckage. The victims, blown overboard from the *Florence II.*, would come to the surface and try to float by clinging to one of the hundreds of powder-cases bobbing all about; the wooden frame of the case would flash into light—the contents would explode and tear its victims into shreds. The reverberations were as loud and as constant as a bombardment. Swimmers had to take refuge by swimming far under water; when forced to rise for air, they would draw into their lungs great drafts of fire.

"'An' I had to swim slow,' one of the crew later told me in hospital, 'because I was tryin' to carry my buddy with me, an' he don't know how to swim at all.' . . ."

The vessels of the escort were in no position to help. The converted yachts were wooden and could not survive contact with that fiery sea. The destroyers were made of steel, but they were loaded with depth charges which might be touched off by the flames and explosions. Captain Wilson, therefore, believing that the men of the *Florence II.* were beyond helping, signaled a neighboring destroyer to be careful, for she was on the edge of the liquid fire.

Commander Frank T. Evans, U. S. N., represented the United States at the inquiry. He reports to Rear Admiral Wilson:

"I am of the opinion that the ship was not torpedoed. It will be noted that there is no evidence of any geyser of water, that there was no shock felt on board neighboring vessels, and that of the two witnesses who were in the engine-room at the time of the explosion, one, who

was torpedoed twice before, states positively that the ship was not torpedoed, while the testimony of the other seems to indicate that the ship was not torpedoed. The evidence shows that there were no steam leads in the cargo spaces, but that electric leads in iron conduit passed through the 'tween decks. The evidence also shows that there was coal stowed under the powder in No. 2 hold. A short-circuit of electric outlet or a spontaneous combustion may have created sufficient fire to cause the cargo to explode. From the investigation I am inclined to the opinion that the vessel was destroyed by an infernal machine placed either in the coal in No. 2 hold or in the cargo there."

Whether that opinion be right or wrong may possibly never be known, but, no matter what the cause of the explosion, the heroism of the rescuers will be long remembered. They proved themselves the legitimate inheritors of our Navy's reputation for bravery, the defenders of its best traditions.

THE CYCLOPS

The naval collier *Cyclops*, though not a cargo carrier in the ordinary sense, being a unit of the Navy, was nevertheless engaged in that capacity at the time of her mysterious disappearance. The *Cyclops* was an immense collier, 19,000 tons, and her great carrying capacity was utilized by the government for the purpose of bringing a cargo of manganese from Brazil. On March 4, 1918, she put in at Barbados, British West Indies, for coal, and she was due home on the 13th. It was known that one of her engines was injured and that she was traveling at reduced speed, but there was no communication by radio to suggest that anything serious was wrong. As she failed to appear in reasonable time and nothing could be got from her by wireless, a search was instituted, but although the entire region was scoured not a vestige of the great ship was ever found. After months of vain search the *Cyclops* was set down among the lost. Oddly enough it was in these very waters that, over a century ago, we lost the prize taken from the French, the frigate *Insurgente*, which disappeared in the same mysterious fashion. What seems most extraordinary is the fact that such a ship as the *Cyclops* could vanish so completely when she had every opportunity of com-

municating by wireless if she had fallen into distress. It looks indeed as if some infernal machine had been smuggled on board her, potent enough to destroy her wireless outfit at the first blow. In this disaster the personnel lost represented 20 officers, 57 passengers, and a crew of 213.

IX

THE U. S. NAVY IN EUROPEAN WATERS

OF course our most extensive naval coöperation in the war was with the British, and no better summary of the details of organization can be made than that of the Secretary of the Navy in his report:

"Inasmuch as the British are predominant in naval activity, it is natural to find that a major part of our naval activities are in coöperation with them and controlled by them. In fact, the British have been in position to carry so much of the 'naval load' of this war that our first and our principal efforts have been toward taking up a share of that load.

"Coöperation has in many cases been carried to such an extent that the coördination necessary for efficiency has developed into practical consolidation. It is pleasing to note that while consolidation is all but a fact, our own naval forces have in every case preferred to preserve their individuality of organization and administration and, as far as feasible, of operations; and that a healthy and friendly rivalry between them and their British associates has resulted in much good to the personnel of both services.

"The largest single group of naval activities wherein coöperation is effected with the British is that in Ireland, all of them being under the jurisdiction of the Commander-in-Chief, coast of Ireland, who has been and is Admiral Sir Lewis Bayly, whose cordial appreciation of the work of our forces has gone far to stimulate the personnel coming under his direction. The chief of staff, destroyer flotillas, and the officer in charge of aviation in Ireland are designated by the British Admiralty as members of the staff of Admiral Bayly.

"*Battleship division six* is based on Berehaven, Ireland, in readiness for the protection of convoys in general and of troop convoys in particular.

"*Submarine detachment* is based on Berehaven, Ireland, and maintains a submarine patrol

off the west and south coasts of Ireland. Their service is hard; they have had a great deal of work at sea and have cheerfully met every demand made on them.

"The destroyers based at Queenstown are the original United States naval force in European waters—a distinction which is an ever-present spur to cheerful efficiency under any and all circumstances and produces results which must be a satisfaction to their superiors."

"Subchaser detachment three at Queenstown

route. A great deal of the construction has been done by our own personnel, some of the stations having been entirely done by them.

"Battleship Division Nine of the Atlantic Fleet, under the command of Rear Admiral Rodman, has constituted the Sixth Battle Squadron of the British Grand Fleet under Admiral Sir David Beatty for nearly a year."

"When this division was sent abroad it had, in common with other units of the Atlantic Fleet, suffered in efficiency from the expansion



Anglo-American Naval Allies

Secretary of the Navy Daniels is here seen with Sir Eric Geddes, First Sea Lord of the Admiralty (center), and Admiral Benson.

had only recently arrived, but arrangements for their employment were well in hand, and they were expected to begin operations as soon as the means of basing them had been perfected.

"United States Naval Air Stations in Ireland consists of seaplane stations at Whiddy Island, Queenstown (also the main supply and repair base), Wexford, and Lough Foyle, and a kite-balloon station at Berehaven. None of these stations was in operation in mid-September, except that Lough Foyle was partially so, but all were about ready to begin operations and would do so upon the receipt of the necessary planes or pilots or both, all of which were en

of the Navy, which required reduction in the number of officers and transfers of numbers of men to furnish trained and experienced nuclei for other vessels. Upon reporting in the Grand Fleet, it immediately took its place in the battle line on exactly the same status as other units of the Grand Fleet. The opportunities for gunnery exercises is limited but drill and adherence to standardized methods and procedure as developed in our own naval service have brought this division to a satisfactory state of efficiency which continues to improve."

"It is pleasing to record that the efficiency of this unit in gunnery, engineering, and seaman-

ship is deemed by the British Commander-in-Chief to be in no way inferior to that of the best of the British battle squadrons. In fact, it is perfectly proper to state the belief that our ships are in some respects superior to the British, and perhaps chiefly in the arrangements for the health and contentment of personnel, which have been very thoroughly examined into by the flag officers, captains, and other officers of the Grand Fleet. These ships have also been the subject

independent unit, except that the mine-laying operations are under the jurisdiction of the Commander-in-Chief of the Grand Fleet, who has to choose the time when arrangements can be carried into effect to furnish the necessary destroyer escort and heavy covering forces. The arrangements made at home prior to the departure of the mine force appear to have been well considered and thoroughly developed. The mine-laying operations themselves give an im-

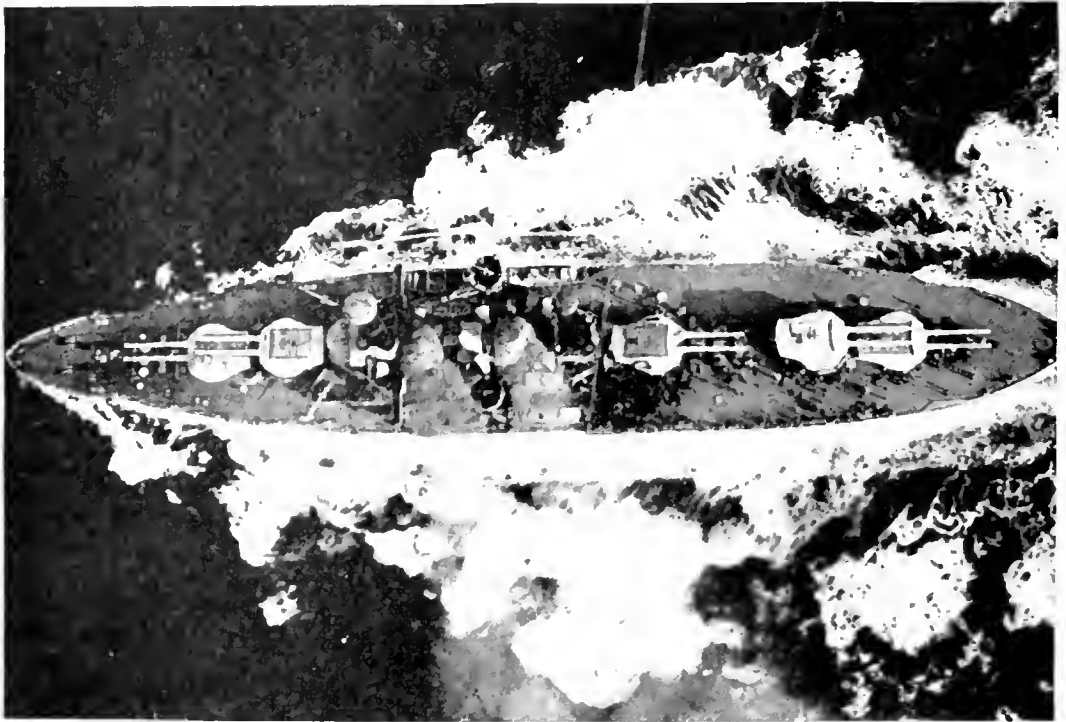


Photo by Hunter.

The Battleship *New York* from an Airship

Like all American warships in European waters, this dreadnought became temporarily a part of the British Navy. In the sense that he commanded American men-of-war, Admiral Jellicoe was an American officer. A spirit of good fellowship was developed between the two forces which promises well for the future of Anglo-American relations.

of much favorable comment in regard to their capacity for self-maintenance, a matter which has been given much attention in our own Navy of late years.

"Service in the Grand Fleet is noteworthy by reason of the fact that the fleet is at never less than four hours' notice for going to sea, so that liberty is restricted and whatever is necessary in the way of overhaul and upkeep of machinery must always be planned with a view to assembly in case of orders to sea.

The mine force of the Atlantic Fleet under the command of Rear Admiral Strauss is an

pression of efficiency which can only come from thorough preparation and complete understanding of the work.

"The cross-channel transport service was brought into being to render indispensable assistance to the British in ferrying United States troops across the channel from England, in whose ports over half of our troops were landed from British ships. At the time of inspection late in September four United States vessels were in service, and four more were expected in the course of a few weeks. The vessels in service were superior in capacity to British vessels

engaged in the same work and combined with the efficiency of their naval personnel made them the subject of favorable remark by the British transport authorities.

"*Subchaser detachment one*, based on Plymouth, had been operating for some time. This base is to be expanded into a United States naval base. The upkeep of chasers is effected entirely with the resources of the base; operations are initiated by the British Commander-in-Chief at Plymouth. A great deal of development work in listening devices is being carried on at and from this base. The work of the subchasers from this base has proved their usefulness up to the limit of their sea-going capacity.

"*United States naval aviation in England* is carried on by coöperation in two British commands.

"*The United States seaplane station, Killingholme*, is under the vice admiral commanding on the east coast of England. It has been in operation for some time and does escort of coastal convoys, escort of mine layers in the southern part of the North Sea, and some reconnaissance work in the direction of the Dutch coast.

"*The northern bombing group* is under the vice admiral commanding at Dover, whose jurisdiction extends to naval aviation units in Northern France in the vicinity of Calais and Dunkerque. The day bombing squadrons are manned by Marines; the night bombing squadrons by the Navy. There has been some delay in the acquisition of suitable night bombing planes, but their delivery will find all in readiness to go immediately to work. The British prescribe the objectives and designate the available free flying time; the operations themselves are carried out by our own personnel. The seaplane station at Dunkerque has operated successfully under the handicap of limited and difficult water area in which to take off and to land.

"*The assembly, repair, and supply station at Eastleigh* was brought into being primarily for the Northern Bombing Group because of the difficulties of transportation to and from the general aviation base at Pauillac. It also does necessary work for Killingholme and for the air stations in Ireland."

PRAISE FROM SIR ERIC GEDDES AND ADMIRAL BEATTY

How far the American Navy showed itself capable of team work with the British is suggested by the following extract from a speech

made in Parliament by Sir Eric Geddes, First Lord of the Admiralty:

"It is perhaps natural that the cooperation between ourselves and the United States should be extremely close. I wish in behalf of myself and my colleagues publicly to pay tribute to the whole-hearted and generous devotion to the prosecution of the war which has governed the actions of every representative of the United States.

"We have the advantage of constant consultations with Admiral Sims, who attends our daily staff conferences. We have American officers working in various sections of the British Admiralty on exactly the same footing as British officers. The coöperation between the two nations is as nearly complete as possible."

But it takes two to coöperate as it does to quarrel, and the English, for their part, were in no way behind. As one of our destroyer officers said of Vice Admiral Bayly, the commanding officer of the destroyer forces based on Queenstown, "if we could, we would transfer Admiral Bayly to our own service."

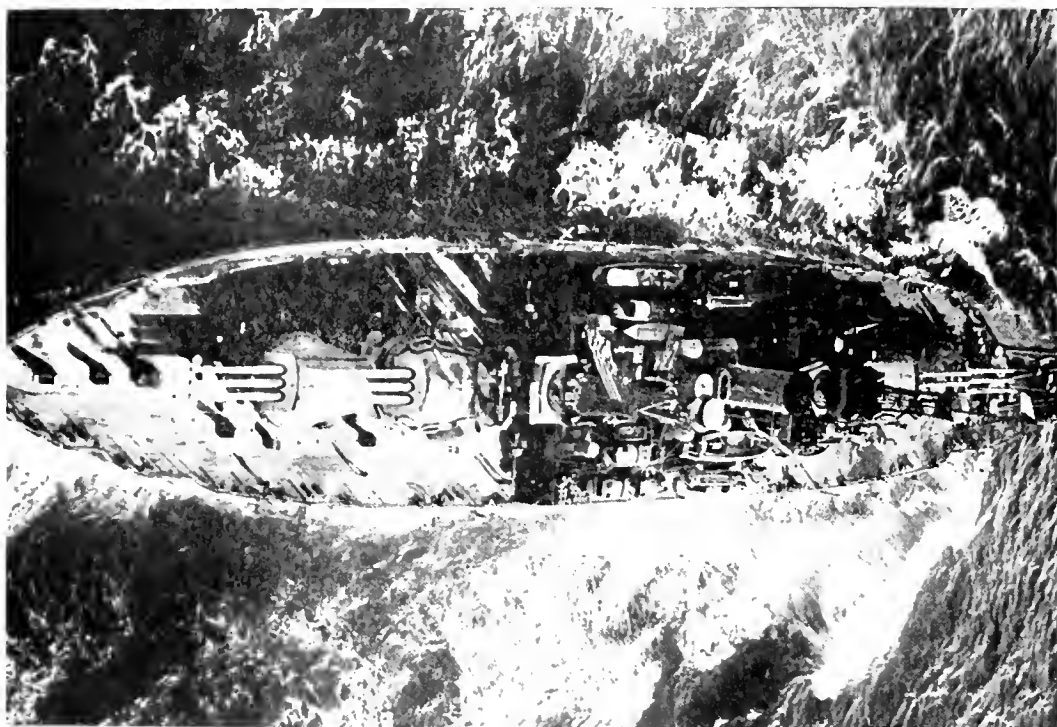
And the parting words of Admiral Beatty to the Sixth Battle Squadron, composed of American battleships under Rear Admiral Hugh Rodman, breathes the fraternal spirit of the great Navy with which our Navy pulled in harness. The address was delivered on board the U. S. S. *New York*, the American flagship, on December 1, 1918, on the occasion of the starting home of the American squadron. Admiral Beatty spoke as follows:

"I could not let the Sixth Battle Squadron go without coming on board the *New York* and saying something of what I feel at this moment of your departure. I had intended to ask Admiral Rodman to permit me to say something to representatives of all the ships of the Sixth Battle Squadron on board his flagship, but the exigencies of the service did not permit me. Therefore, as Admiral Rodman has said, what I say to you I hope you will promulgate to your comrades in other ships and also to your comrades of the Atlantic Fleet. What I say, I hope you will understand, comes from the heart, not only my heart but the hearts of your comrades of the Grand Fleet.

"I want first of all to thank you, Admiral Rodman, the captains, officers, and ships' companies of this magnificent squadron, for the wonderful coöperation and loyalty you have given me and my admirals and the assistance you have given us in every duty you had to undertake.

The support which you have shown is that of true comradeship, and in the time of stress that is worth a very great deal. As somebody said the other day, 'Fighting is now over; talking is now going to begin.' Therefore, I do not want to keep you here any longer, but I want to congratulate you for having been present upon a day unsurpassed in the naval annals of the world. I know quite well that you, as well as all your British comrades, were bitterly

ing a blow.' I had always certain misgivings, and when the Sixth Battle Squadron became part of the Grand Fleet those misgivings were doubly strengthened, and I knew then they would throw up their hands. Apparently, the Sixth Battle Squadron was the straw that broke the camel's back. However, the disappointment that the Grand Fleet was unable to strike their blow for the freedom of the world is counteracted by the fact that it was their prestige alone



© Underwood and Underwood.

The Battleship *Pennsylvania* as Seen from Above

This interesting picture was taken from an airship flying not very far above the water on a somewhat dark day. Aerial photography was greatly developed and played a very important part both in the Army and the Navy during the World War.

disappointed at not being able to give effect to that efficiency you have so well maintained. It was a most disappointing day. It was a pitiful day to see those great ships coming in like sheep being herded by dogs to their fold without an effort on anybody's part, but it was a day everybody could be proud of.

"I have received messages from several people offering sympathy to the Grand Fleet, and my answer was, 'We do not want sympathy. We want recognition of the fact that the prestige of the Grand Fleet stood so high it was sufficient to cause the enemy to surrender without strik-

that brought about this achievement. During the last twelve months you have been with us we have learned to know each other very well. We learned to respect each other.

"COMRADES OF THE MIST"

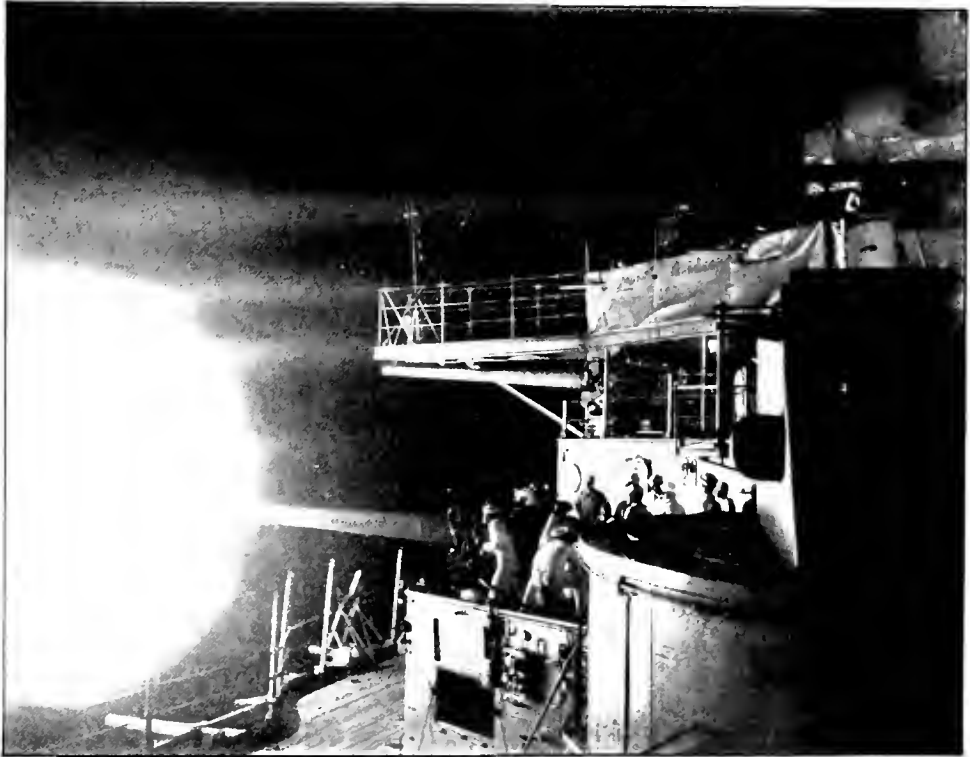
"I want you to take back the message to the Atlantic Fleet that you have left a very warm place in the hearts of the Grand Fleet which cannot be filled until you come back or send another squadron to represent you. You have given us a sample of the Atlantic Fleet which

I think it will try the Atlantic Fleet, efficient as it is, very hard to reproduce. I understand you are now going to Portland, where you are to get leave. After that you have the duty to perform of bringing your President to these waters, and then you will return to your own shores. And I hope in the sunshine, which Admiral Rodman tells me always shines there, you will not forget your 'comrades of the mist' and your pleasant associations of the North Sea. This is a queer place, as you found, but you

"I thank you again, again, and again for the great part the Sixth Battle Squadron has played in bringing about the greatest naval victory in history. I hope you will give this message to your comrades. 'Come back soon.' Good-bye and good luck."

CONCLUSION

At the opening of this discussion of the part played by the American Navy in



© E. Muller, Jr.

Firing a Five-Inch Gun Aboard the Battleship *Arkansas*

Had the World War ever come to a test of naval gunnery these guns and the many others on all the ships that make up the United States Fleet would have been turned against Germany.

were not the first to find it out. There was a great explorer, Marco Polo, who, after traveling over the world for thirty years, one day found himself in the North Sea and then went home and went to bed and did not travel any more. I trust it will not have the same effect on any of you, but I can say that those of you whom I have seen during the last twelve months seem to have improved in many ways, if it is possible, and I think the North Sea has a health-giving quality which must be put against all the bad points, of which it has so many.

the war, the word *teamwork* was selected as the one that characterized both its service and its spirit. And in the foregoing pages it is not hard to see this idea of teamwork revealed in the achievements of invention, engineering, transport, or submarine fighting. It was coöperation all round. The Navy co-operated with the Army, in problems of transport, in its heavy guns mounted for service on land, and, if it is fair to claim the Marines as a part of the naval organization, the Navy

contributed in these a particularly splendid body of fighting men, as all the world knows. The American Navy coöperated with the Italian and the French Navies and above all with the British Navy; in the last instance content to subordinate itself to British control for the sake of the common end.

Moreover, the entire strategy of the war, clearly conceived from the outset, demanded a pulling together of all naval activities and resources. There was no likelihood of a naval battle. The problem that faced the American Navy was to *get the Army across*. Serious factors in the problem were the lack of ships and the enemy submarine, so serious indeed that many experts declared it impossible of solution. Once the Navy took hold, it had to concentrate on the removal of these great obstacles to the purpose in hand. Hence all the different things done by the Navy, enumerated in the preceding pages, were not different in purpose; they were all related parts of a single scheme. Whether it was the repair of German liners, the rapid building of destroyers, the organization of convoys, the hunt

for submarines off the Irish or the Brittany coasts, or the laying of the great mine field from Norway to the Orkneys, all represented parts of one plan: to make certain the control of the sea so that our Army could be landed in France soon enough to save the day.

Our naval history has thus been enriched by a new chapter. It is a different chapter from the rest. It has no stirring and dramatic ship duels like that of the *Bonhomme Richard* and the *Serapis*, or the *Constitution* and the *Guerrière*; while there has been heroism in plenty, it has been the courage and endurance of danger constantly faced in the "day's work." Our Navy had been trained to fight, but this war brought a problem not so much of fighting as of organization, of rapid adaptation to novel and difficult conditions. "A naval officer," remarked an English commodore years ago, "must expect to be called on to do anything." This ideal of efficiency the American Navy brought to its work in the World War, and performed it in a way that is not only worthy of its best traditions, but has set a new tradition for the future.

SECTION VI—OTHER NAVIES

NAVAL WORK IN MANY SEAS

The Italian, Japanese, and French Fleets Were Actively Engaged in Maintaining the Allies' Command of the Sea

THE naval story of the great war is primarily the story of Great Britain's grip on the seas and the efforts of Germany to break it. On the Allied side naval operations meant chiefly the operations of the British fleet. In size and control of the naval strategy of the war, the British Navy dominated all others. Hence in the foregoing pages the accounts of naval engagements have dealt with British ships and commanders in conflict with German ships and commanders. But Great Britain was in alliance with other nations that possessed navies of considerable importance and that contributed invaluable services to the cause. It is only just that

these should have their due share of appreciation, especially as they are in danger of being overlooked.

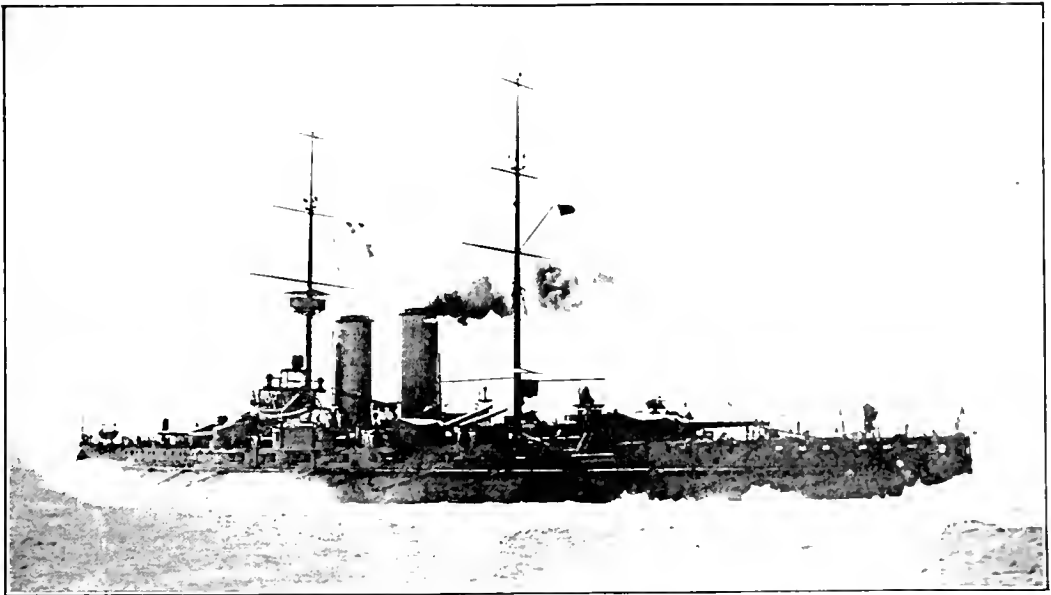
GERMANY

BEFORE turning to the navies of the Allies, we will pause to observe the naval development of Germany and Austria up to 1914, for the naval strategy and the fleet power of the Central Powers had much to do with Allied operations in the Baltic and the Mediterranean. The extraordinary growth of the German Navy is interesting not only in itself but as one of the most im-

portant political factors in the last twenty years, for it openly challenged England's sea power and changed the relations between the two nations from cordial friendliness to mutual hatred and suspicion. Germany had no traditions on the sea. The rise of Prussia had nothing to do with a Navy, and the three wars that Bismarck made for the sake of making Prussia dominant over a united Germany owed nothing whatever to ships. But the first of these, the war against Denmark in 1864, gave Prussia the important harbor of Kiel, Wilhelmshaven had gone to Prussia by

VON TIRPITZ AND GERMANY'S NAVY

In 1897 the Reichstag turned down a proposal to increase naval expenditures made by Admiral von Hollmann, the Minister of Marine. This rejection caused his retirement. In his place stepped an unknown naval officer named von Tirpitz, who was fully determined not to permit a mere debating society like the Reichstag to stand in the way of a big Navy. In 1898 he brought in a bill which provided for a Navy of only nineteen battleships but which stipulated further that



© Underwood and Underwood.

The Austrian Battleship *Zrinyi*

She was built in 1910, has a displacement of 14,226 tons, and a main battery of four 12-inch guns.

purchase from the Duchy of Oldenburg shortly before, and the war against Austria and the other German states in 1866 had resulted in giving Prussia the entire North Sea coast. In the last of the three wars, that of 1870, all the sea power was on the side of France, but it was so wretchedly employed as to have no bearing whatever on the outcome of the conflict. The war was won overwhelmingly by the German Army. It was perhaps on this account that Bismarck took so little interest in a German Navy.

There was, as a matter of fact, little foundation in material, in tradition, or in sentiment for a navy in the German Empire.

the size of the fleet should be fixed for a certain number of years, and that at certain dates old vessels should be replaced by new. Thus, although the Reichstag voted every year on the Navy Budget, it became a mere matter of form to carry out a predetermined program; and the policy of "replacing" old ships became simply adding new ones. For the next seventeen years Tirpitz remained in power; that is, up to the beginning of the war—and during all that time the only obstacle in his path was the objection of the Army to his using up so much of the country's money for the fleet.

In 1900 von Tirpitz introduced a bill

that doubled the German Navy and gave England, then unpleasantly involved in the Boer War, a severe jolt. Thereafter it became increasingly clear that Germany was aiming to wrest the supremacy of the sea from Great Britain. For the latter, therefore, the old policy of "splendid isolation" was over; and England came to an understanding with one hereditary enemy, France, and later, through France, with another hereditary enemy, Russia. Meanwhile von Tirpitz had gone ahead. In 1906, 1908, 1912 the original bill of 1900 was expanded till Germany had reached second place as a naval power and was forging on toward her aim, first place. In all this work von Tirpitz had the enthusiastic coöperation of the Emperor, and by clever press propaganda made the Navy immensely popular throughout the country.

As described in a previous section, the Germans possessed the most powerful naval fortress ever known in the North Sea coast defenses, and were able, by means of the Kiel canal, to operate in the Baltic as well as the North Sea. At the same time they had an enemy on both flanks, England in the North Sea and Russia in the Baltic.

AUSTRIA

ALTHOUGH Austria had but a trifling seacoast in point of extent, that seacoast opened on the Mediterranean, an all-important highway for the Entente nations and for Italy. Accordingly pressure was brought to bear on the Dual Monarchy by her northern ally to develop a modern Navy to challenge the control of the Mediterranean. In one respect Austria had the advantage of Germany: she could boast a great seaman and a great victory—in short, a tradition. In the battle of Lissa, in 1866, the Austrian admiral Tegethoff met and defeated the Italian fleet. Tegethoff had nothing but old-fashioned wooden ships, while the Italians possessed modern ironclad, one of which could destroy the entire Austrian fleet. But, thanks to the superb leadership of Tegethoff and the incapacity and cowardice of the Italian admiral, the wooden ships utterly routed the ironclads, and the name Lissa became famous the world over.

From 1868 to 1871 Tegethoff was Marine Commandant, and strove manfully to persuade his country to adopt a naval program. Others who followed him tried similarly but the authorities refused to be interested. Admiral Montecucoli, however, backed by the Archduke Francis Ferdinand, succeeded better, and the naval budget trebled between the years 1904 and 1914. Large sums also were spent on developing the fleet base at Pola. At the outbreak of the war Austria possessed four dreadnoughts and six predreadnoughts, ten cruisers, sixty-three torpedo boats, and ten submarines.

THE RUSSIAN NAVY

LESS than a decade before the World War, the Russian Navy had been practically annihilated in the war with Japan. Like every other military operation undertaken by Russia in that disastrous war, the Navy was crippled by dishonesty and incapacity, the best of the leaders lost their lives and the rest made every mistake possible under the circumstances. This was no inspiring beginning for a new Russian Navy. In 1912, however, an important measure was passed providing for a program of naval expansion on a considerable scale. This increase was due to the increasing menace of Germany's naval expansion and its consequent threat to the Russian Baltic coast. This program was to be completed in 1924, but it had of course hardly begun to be realized in 1914.

At the outbreak of war the Russian Baltic fleet consisted of only four dreadnoughts, ten cruisers, two light cruisers, about eighty destroyers, and twenty-four submarines. A fleet of this character could not undertake offensive operations against the German, and it was shut away from coöperation with the British, but it was a "fleet in being" of a sort and therefore a constant threat on the German right flank which could not be ignored. Moreover, it served as a protection for the right flank of the Russian Army.

NAVAL ACTIONS IN THE BALTIC

The record of the naval operations of the Russians is not impressive. The Russian

navy did far more in the year 1917-18 toward destroying Russia than it accomplished throughout the war toward defeating Russia's enemies. The successes gained in the Baltic were insignificant. In August, 1914, the German light cruiser *Magdeburg* ran aground near the entrance to the Gulf of Finland, and the Russians managed to sink her. In March, 1915, the Navy coöperated

Russian force had been properly handled the entire German squadron would have been destroyed. Later in the same summer the Germans made a naval assault on the Gulf of Riga, which was repulsed. But the only operations in the Baltic that offer satisfactory reading to a friend of the Allies were those of the British submarines that wormed their way into the Baltic and sank or dis-



Commander Rizzo (center) and Lieutenants Aonzo and Gori

Italian naval officers whose daring raids wrought great damage to Austrian warships.

with the Army in the short-lived raid on Memel. In July five Russian cruisers caught a detached squadron of the German Baltic fleet consisting of one cruiser, a mine-layer and three destroyers. The cruiser *Augsburg* got away; the destroyers manfully stood by the mine-layer *Albatross*, and apparently escaped after the latter was driven into Swedish waters in a sinking condition. As the *Augsburg* brought news of the fighting, the armored cruiser *Roos*, and a light cruiser, accompanied by destroyers, sallied out to attack the five Russian cruisers. The *Roos* was damaged and compelled to retire, but if the

abled more German ships than the whole Russian Baltic Fleet put together.

THE WORK OF THE BLACK SEA FLEET

As to the Black Sea Fleet, at first the presence of the *Göeben* gave the initiative to the Turks, who carried out raids and bombardments on the Russian coast. On November 18, 1914, the Russians gave battle to the Turks and drove them back to the Bosphorus. In returning the *Göeben* struck a mine that put her out of commission for some months. This fact, combined with the completion of

a new Russian battleship on the Black Sea, gave the control of that water thenceforth to the Russians. The chief contribution they made to the Allied cause in 1915 was to divert Turkish strength and attention by repeated attacks on the Bosphorus at a time when the British and French were hammering at the Dardanelles. The greatest service of the Black Sea Fleet in the war was the support it gave to the Russian armies operating in the Caucasus in keeping open the sea communications for the Russians and denying these to the Turks, who had to depend on difficult land communications instead.

One exploit deserves honorable mention. The submarine *Tyulen* under Lieutenant Commander Kititzin attacked the Turkish transport of 6,000 tons near the Bosphorus on October 12, 1916. The transport was armed, but by clever handling the Russian set her afire in several places and smashed her steering gear without damage to himself. The transport surrendering, the submarine's crew went on board, repaired the damage and brought her to Sebastopol as a prize.

A tragic disaster to the Black Sea Fleet occurred the following week when the dreadnought *Empress Maria* caught fire and blew up with the loss of over 200 men. The inability of those on board to localize the fire and drench the magazines in time to save the ship suggests a want of efficiency which has been the most prominent characteristic of the Russian Navy in its entire history.

ITS PART IN THE REVOLUTION

From this point on the Russian Navy accomplished less and less until it made itself notorious by the part it played in the débâcle of Russia. During the long winter months of 1916-17 the Baltic Fleet lay idle behind a barrier of ice. The battleships lay at Helsingfors, Finland; the cruisers at Reval, Esthonia, on the opposite side of the Gulf of Riga; and the destroyers, submarines, and other small craft were posted at various other Baltic ports. Both Finland and Esthonia, being conquered provinces, were secretly hostile to the Russian imperial government, and being of different race and speech felt no kinship with the Russians whatever. In coming in intimate contact with these peoples, the

Russian sailors had to deal with the most rebellious elements in the Empire. Moreover, the seamen themselves remembered with resentment the naval riots and uprisings of the abortive revolution of 1905, which were put down with such ruthlessness by the authorities. At best naval discipline in the Russian Fleet was brutal, and there was no consciousness of team spirit or coöperation between officers and men such as one finds to a striking degree in the British or American Navy. In consequence when the uprising began in Petrograd on March 9, 1917, it found no more ready response than in the sailors of the Baltic Fleet. The officers had no influence with them; many of these, from the commander-in-chief down, were murdered, and the entire Russian Navy fell to pieces. Under the leadership of the youthful Admiral Kolchak, the Black Sea Fleet held firm at first as an organization, although supporting the Provisional government, but the demoralization could not be checked. Officers resigned under the hopeless conditions and their places were given to ignorant and inexperienced men.

Later in the year, the Bolshevik revolt against the government of Kerensky found its most ardent supporters among the sailors. The German attack on the Riga Gulf in October met with slight resistance from a fleet occupied chiefly with oratory. Two old battleships, an armored cruiser, and eight destroyers, commanded by Vice-Admiral Bakhireff, made a gallant but fruitless defense against the German fleet under Admiral Schmidt; the rest of the Baltic Fleet did nothing whatever.

The access of the Bolsheviks to power resulted in further murders of naval officers, this time to a great degree in the Black Sea Fleet, and these murders were numbered by the hundred. By the following spring the Germans controlled the Baltic provinces and the Black Sea coast as well. Finally the Brest Litovsk treaty of the midsummer made a fitting consummation for the whole miserable story, and the Germans helped themselves to all that was left of the Russian Fleet.

No navy in the world has had such a history of mismanagement, failure, and disaster as has the Russian, and its inglorious end was the blackest page of all.



The Box from Home

THE NAVY OF JAPAN

FOR Japan the World War was not, as it was for the other participants, a struggle for life or death involving the whole of a nation's resources. Far removed from the theater of war and untouched by the issues involved, Japan's part was limited to the services of her Navy, and the operations of that Navy restricted chiefly to a patrol of the Pacific.

Japan entered the war in compliance with a treaty with England of a decade previous to 1914. It is interesting to speculate on what would have happened if Japan had seen fit to repudiate that treaty and had entered the war on the side of the Central Powers. With the Pacific in the hands of an enemy, England would have been unable to keep communications with her colonies, and even if the United States had stepped in, no ships of ours would have been available for service in the North Sea and no Army of two millions would have gone to turn the scale in Northern France.

The sanctity of a nation's word, sufficient as it undoubtedly was for Japan, was not, however, the only interest that bound the Nipponese to the Allied side. As recompense for the murder of the German ambassador at Peking by the Boxers, the German government had exacted from China the province of Shantung with the important harbor of Tsingtau. This acquisition is situated directly opposite Korea, which is controlled by Japan, and in close proximity to Japan herself. To the Japanese Shantung in the hands of Germany could only mean a menace to the safety of their own country and an obstacle to every plan of Japanese expansion in Asia. In short, as the Japanese representatives made clear at the Peace Conference, Japan desired Shantung for herself.

Accordingly, the first step in the war was the capture of Tsingtau, which was stubbornly and ably defended by the German garrison and residents. At the same time the cruisers of Japan took the sea in pursuit of German raiders like the elusive *Emden*. For the remainder of the war the Japanese Navy stood guard over the Pacific and the British empire in the east. At the same time Japanese destroyers performed invaluable service

in the Mediterranean on convoy duty. The following brief and modest summary, by a Japanese writer, of the services of the Japanese Navy appeared in the *Scientific American*:

IN THE MEDITERRANEAN

"What has the Japanese Navy done, what is it doing, for the cause of the Entente Allies? The question is getting both fashionable and a bit persistent. It is quite natural that it should be so; these are the days when the Britisher is actually wondering what the British Navy is doing and the American is showing some impatience in finding out just what it is that the American Navy is doing.

"And as though in answer to the query—not many weeks ago the Japanese light cruiser *Akashi* steamed into the naval port of Yokosuka. She had returned from the Mediterranean. Aboard her she had brought home the remains of Captain Uehara and his men who had lost their lives when the destroyer *Sakaki* was torpedoed by a U-boat. That was news to the people of Nippon. For the landing of the remains of the *Sakaki's* commander and his men was about the first pointed hint they had had of the war activity of the Japanese Navy in European waters.

"Since then, the cruiser *Hirato* has also reported home at Yokosuka. She had been in continuous service for nine months, and had steamed over twenty-six thousand knots. And according to her officers most of that was over pretty stormy waters—her deck often under three feet of sea, while pitching up 35 degrees was such a common experience with her men that they simply said nothing and got used to the thing.

"The *Niitaka*, another light cruiser, came home after the *Hirato*. And the performance of the *Niitaka* has completely eclipsed the feats of the *Hirato*. For the *Niitaka* had been out for two years. She had left the naval base at Sasebo in the early days of December 1915, and had been in continuous service ever since. She had steamed altogether over fifty thousand knots—equivalent to more than twice the circumference of the globe.

FROM SYDNEY TO SUEZ

"Both the *Niitaka* and the *Hirato* have been out on patrol duty—keeping the sea lane from the Far Eastern ports to Suez not only open, but safe from the German raiders. Their work has been unnoted and unsung. They seem to count it lucky that they did not, like Gray's

gem of purest ray serene, end by adorning some dark unfathomed cave of ocean. But from the way their men talk, the German raiders were about the easiest enemy they had to contend with. Typhoons, monsoons and other moods of the temperamental South Pacific and Indian Oceans were much worse. But the worst storms encountered were as nothing compared to the laughs of the swivel chair critics at home and abroad. Such critics can patrol the sea lane from Sydney to Suez in a sentence of ten words: naturally they don't think it much of a job. The newspaper readers read the sentence in half a second; they think of it even less than does the erudite author. But to the men and ships of the Nippon Navy who measure the sea at 10 and 15 knots an hour, it looks entirely different—this business of patrolling the 6,000-mile path through the world's wildest waters, from Sydney to Aden. This task is anything but a joke, anything but a sinecure, when the crew is rolling and staggering through three feet of water above deck, with the captain on the bridge looking like a drowned rat.

"When that famous German raider *Emden* was having her little game with the merchantmen to the tune of 20 ships and \$20,000,000, the query, 'Where's the Japanese Navy?' was persistent enough to get on the nerves of the men of the Nippon Navy. When the raider was at last sent to the place whence she will never come back—not by a ship of the Japanese Navy but by a modest little Australian cruiser—the query turned into a laugh. It was not a pleasant laugh in anybody's ears, more especially so not in the ears of the men of the Imperial Japanese Navy. The world laughed at them—then. All that has changed a little since.

"When the commander of the Japanese squadron which convoyed the British Colonial troop ships all the way from the Far East to Europe reached London, the men of the British Navy said nice things to him, gave him a little silver trophy as the token of their high appreciation of his work, and told him at a public banquet that it was due entirely to the work of the Japanese Navy that the Australian cruiser *Sydney* was able to get on the track of the *Emden* and sink her off Cocos Island—because if the Japanese ships had not covered so well the route through the Indian Ocean and the South Pacific, the Australian cruiser would never have been able to chase the German raider to its final destruction. The same could be said of the destruction of the German Fleet under Admiral von Spee off the South American coast by a British fleet.

JAPANESE DESTROYERS FOR FRANCE

"Rear Admiral Moriyama made a statement recently about what the Japanese Navy has done in furnishing new destroyers to the French Navy. That was entirely a bit of news to most of his own countrymen and doubtless so to the general public of Europe and the United States. The Admiral's remark had no reference to the Japanese destroyer and cruiser squadron under the command of Rear Admiral Sato which is fighting U-boats in the Mediterranean in coöperation with the ships of the Entente navies. He meant that the Japanese navy yards had built a number of destroyers for the use of the French Navy. He did not specify the exact number—he merely indicated that it was more than ten. And according to the same high authority, the Japanese Navy did more than build these destroyers for the French Navy. When they were ready for service they were delivered—the men of the Japanese Navy took them from a Japanese port clear over to the French waters.

"Not so many weeks ago, one of the sons of an ex-President of the United States was aboard an American transport making for a French port. The ship was passing through a danger zone. The ex-President's son and his comrades noticed that the transport was being convoyed by warships. What they did not expect to see was the flag of the Japanese Navy; but it was there just as red and just as white as ever. The sight was something of a shock—decidedly pleasant to the ex-President's son as the story goes. It seems to have sent the first definite realization that Japan is in fact one of the fighting allies in this great world war."

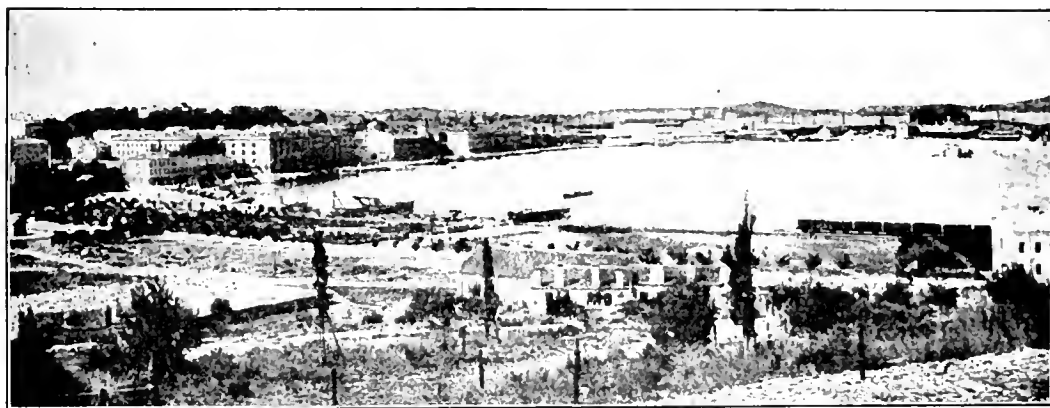
THE ITALIAN NAVY

WHEN Italy entered the war on the side of the Allies, she possessed a Navy second only to that of France in the Mediterranean, and her contribution was therefore a valuable help to the Allies in that sea. Her Navy consisted of six dreadnought battleships, about ten predreadnoughts of varying types, and about ten cruisers. It was weak in fast cruisers but strong in torpedo craft. There were thirty-three destroyers, sixty-seven torpedo boats, and twenty submarines.

The character of the Italian naval campaign was determined by the fact that Aus-

tria had her bases on the Adriatic and used them to threaten the Allied lines of communication in the Mediterranean. The Adriatic therefore became the theater of the naval war, and the problem was the exceedingly difficult one of keeping a blockade against submarines and other torpedo craft at the southern end of that sea. This had been, until May, 1915, when Italy entered the war, one of the many duties of the French Navy, and the taking over of this task was a welcome relief. Fortunately the Italians had, as noted above, a strong force of the torpedo boat and destroyer type, which were practically the only ones available for the kind of warfare entailed by this duty.

Adriatic, therefore, no fleet or squadron battles were possible. The fighting had to be restricted to actions between torpedo craft and occasional raids on naval bases in which the Italians showed extraordinary dash and skill. On the night of October 16, 1916, a strange duel was fought between an Italian destroyer, the *Nembo*, and an Austrian submarine. The destroyer was conveying a transport bound for Valona when a periscope was sighted by the destroyer. The submarine launched a torpedo at the transport, but the *Nembo's* commander gallantly dashed across the path of the missile and stopped it with his own ship. The torpedo exploded and his vessel began to sink, but he ordered



A View of Pola, the Austrian Naval Base

For the big ships there was little but peril. The cruisers *Amalfi* and *Garibaldi*, for example, were torpedoed by submarines and lost in July of that year. Both, however, had served to some purpose in a phase of the Adriatic campaign which, beginning early in the war, continued unremittingly to the end. This consisted of attacks on the Austrian coast stations and naval bases. The work was difficult on account of the topographical character of the coast as well as the menace of submarines. The Austro-Hungarian side of the Adriatic is a maze of islands, with plenty of deep water, forming an ideal ambush for a Navy on the defensive operating with submarines. In contrast the Italian coast is broken by few harbors and its waters are shallow.

Under the conditions that prevailed in the

full speed ahead and tried to ram the submarine. As the latter submerged to get out of the way, he dropped depth charges which soon brought her to the surface in a damaged condition. In a few minutes both antagonists went down together. Only a few survivors were rescued from either vessel. The *Nembo's* sacrifice, however, had saved a transport containing 3,000 men.

THE ITALIAN RAID ON POLA

On the 2nd of November, Italian destroyers performed another exploit that is characteristic of the kind of fighting in the Adriatic and the initiative of the Italian naval men. Three of these craft undertook a raid on the great Austrian naval base of Pola. Their objects were to make a recon-

naissance of the port and torpedo any men-of-war they could find. Accordingly they reached the enemy's coast about midnight, ran the mined waters successfully, then, slowing down, picked their way through the obstacles of the Fasana channel into the harbor. Then while two destroyers remained behind to act as rescue party in case of need, the other carried out a careful and leisurely

ing on account of the persistent submarine attacks, and the subsequent withdrawal of the troops as well as the transfer of the remains of the Serbian Army to the island of Corfu, called for the shield of the Navy. Similar work was required for the protection of Italian merchantmen after the Central Powers embarked on their policy of unrestricted submarine warfare.



© *Scientific American*.

Italian Motor Boat Sinks Austrian Battleship

This small war craft was equipped with torpedoes, one of which, by a lucky shot during an early morning mist, reached the enemy vessel and caused her destruction.

reconnaissance of the entire harbor for two hours. On sighting a large man-of-war, the destroyer tried to torpedo her, but the weapon was caught by the lines of nets that surrounded her. As the presence of the Italians was revealed by this attack they had to turn back. And, despite searchlights and the fire of the shore batteries, the destroyer joined her friends near the entrance and all three got away unscathed.

Another important phase of the Navy's work was convoy. The Italian troops landed in Albania required protection in the cross-

MOTOR BOATS SINK BATTLESHIPS

On June 10, 1915, Commander Rizzo, who had already distinguished himself by torpedoing the *Wien* in the harbor of Trieste, headed another brilliant exploit off the coast of Dalmatia. The *Scientific American* tells the story:

"This has been a war of surprises, and he would have been a bold prophet who ventured to assert that a pair of little motor boats would be able successfully to attack an enemy's dreadnoughts when they were fully screened by destroyers. But the thing has been done by the

selfsame man who, in a daring night raid, broke through the harbor defenses of the enemy at Trieste and sank the coast-defense battleship *Wien*.

"Commander Luigi Rizzo was scouting along the Dalmatian coast, in company with another motor boat in charge of Commander Millazo, and in the dim light of approaching dawn he had just finished his patrol and turned for his base when he sighted, about ten miles away, a cloud of smoke. Turning, he headed back at full speed to discover that two of the latest

then ran for it, escaping between the second and third destroyers in the line. He was sighted by the fourth destroyer, which gave chase and opened fire; but, according to his own cabled description, he was too close to be hit, the destroyer evidently being right on top of him. He then dropped a depth charge, such as is used against submarines, which exploded beneath the destroyer. To use his own words: 'I saw her leap into the air, turn sharply and then stop, giving up the chase and permitting us to escape.' Commander Millazo was also successful in



© Scientific American.

An Italian Sea Tank Breaks Through Enemy Harbor Defense

Among the ingenious ideas introduced by the Italians in the course of the war was that of the sea tank. This was a special form of motor boat, provided with barbed chains. Such a craft was able to climb over the Austrian nets and booms protecting their harbors, and fire two torpedoes at close range.

dreadnoughts of the Austrian navy, of the same class as the *Viribus Unitis*, recently torpedoed in the Austrian harbor of Pola, were proceeding down the coast surrounded by a screen of 10 destroyers. There was only a very faint light, and the attack was favored also by the prevalence of a slight mist. Commander Rizzo selected the leading battleship and assigned the second battleship to the other boat.

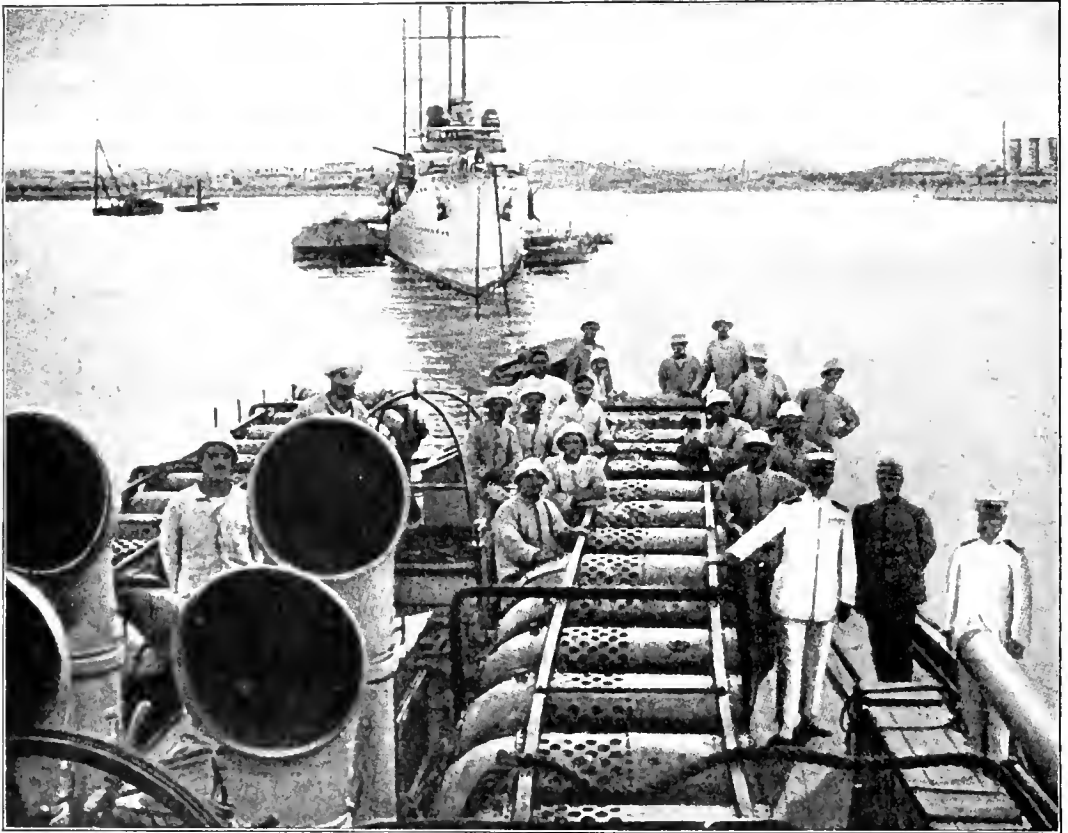
"The attack seems to have been a complete surprise; for the little craft dashed in between the destroyers and Rizzo got off two torpedoes at a range of 250 yards—the first striking the mark between the two funnels and the second getting home just abaft the second funnel. He

penetrating the line, and torpedoed the second battleship. Rizzo states that the ship which he attacked immediately took a heavy list, and in view of the fact that there was no available harbor within three hours' run of the crippled vessels, it is probable that either one or both were sunk, or that they have been run aground and are lost to Austria for the period of the war.

"This brilliant action, with its portentous loss to the Austrian navy, is one of the most daring and dashing feats in the annals of naval warfare. Theoretically, the motor boats should have been quickly sunk by the guns of the destroyers and the broadsides of the Austrian bat-

tleships. That these little craft should have run through the screen, sunk the ships, and got away scot free, makes it certain that the Austrians were taken entirely by surprise; something which, under the circumstances, should never have happened. The blame, of course, rests upon the destroyer screen, which was there for the express purpose of detecting and preventing any such attack."

the shipping lying in the harbor of Pola and torpedoed an Austrian dreadnought. For several months there was much speculation as to what sort of craft this sea tank could be; indeed, one scientific periodical published an imaginative drawing representing a submarine bristling with knives with which it cut its way through torpedo nets! When



An Italian Mine Layer

ITALIAN "SEA TANKS"

No fitter material could be selected to conclude this brief survey of the work of the Italian Navy than two exploits that were performed in the last year of the war. Besides illustrating the initiative and daring of the personnel, it shows how the Italian naval constructors, when confronted by the unique war conditions in the Adriatic, devised special types of boats to meet them.

On May 14, 1918, an Italian "sea tank" successfully crossed the booms that protected

Cushing torpedoed the Confederate ram *Albemarle*, in our Civil War, he found at first that his coming had been anticipated and a boom of logs lay between him and the ram. But, getting up full speed, he drove his launch at and across the line of logs and thus reached the side of his victim with his torpedo. Apparently, reconnaissance had revealed the fact that the larger ships of the Austrians at Pola were similarly barricaded from attack by heavy timber booms, and the Italians went to work to produce a boat that would climb over those timbers and get in-

side. The result was the sea tank. The accompanying description from the *Scientific American* sets forth the workings of this ingenious boat in detail:

"The Pola success was attained by the use of a boat which had been designed for this very kind of work. The hull is of the 'sea-sled' type, with a tractor device to enable it to climb over the torpedo defense boom, with which the harbor was closed.

"On each side of the boat is an endless chain belt, provided with projecting prongs or teeth, which engages suitable sprocket wheels at the ends of the boat. These wheels are carried on brackets at bow and stern, the latter projecting far enough beyond the covering board to protect the rudder and propeller from contact with obstructions crossed by the boat. The tractor belt travels under the bilges of the boat and returns within the hull, as shown. (See cut, page 371.)

"On meeting an obstruction the belt is started; and first the bow and then the body of the back is lifted across the boom. On each side, a 14-inch torpedo is mounted on two shelves or brackets and held in place by a hinged strap. When the strap is released the engine is started and the torpedo falls into the water; being steered to its mark by the gyroscopic steering gear."

THE NAVY OF FRANCE

THE courage and skill displayed by the French Navy in the war, its costly sacrifices and the great service it performed to the Allied cause have earned for it a prestige that it had not won for two hundred years. Its last great war found it demoralized by the French Revolution, without leaders, and opposed to the greatest naval genius of history, Lord Nelson. A war of defeats ended in overwhelming disaster at Trafalgar. The Franco-Prussian War found it strong in material, as compared with the enemy, but paralyzed by the incompetency that marked both arms of the service under the Second Empire. Under the Republic, even to within a few years of the war, it suffered from rapid changes of ministry and the consequent shifts of policy, so that it dropped from second place to fifth among the navies of the world. A reform was begun in recent years, but had not progressed far in reestablishing France as a naval power when the storm burst in 1914.

At that time the French Navy consisted of 23 battleships—only four of these of the dreadnought class—no battle cruisers, about 20 armored cruisers, 9 light cruisers, 84 destroyers, 135 torpedo boats, and 64 submarines. The light cruisers were comparatively old and slow, but, fortunately for the type of warfare that France was called upon to face, her Navy was strong in torpedo vessels.

Before the war the Entente between France and England had defined the zones of naval influence. To England fell the patrol of the North Sea and the Channel; to France, the Mediterranean. On the evening of August 2nd, before Great Britain had taken the great step, Rear Admiral Rouyer was ordered to the Straits of Dover to prevent the passage of the Germans through those historic waters. His force consisted of six armored cruisers and a dozen destroyers. As he reflected on his chances in staving off the entire High Seas Fleet, the French admiral must have had gloomy forebodings indeed. On the following morning, however, British destroyers brought the happy intelligence that the British Fleet was ready to protect the French coast if the Germans attempted to attack. With this news the French Navy was enabled to concentrate practically its entire force in the Mediterranean, where it was urgently needed to protect the transport of troops from Algeria and Tunis. At that time two German cruisers were at large and the attitude of Italy was a matter of doubt. From this time on the Mediterranean was the scene of continuous transport of troops and supplies, and the task of protecting this vital line of communications fell largely upon the French Navy. It should be added also that, until the entry of Italy a year later, the work of blocking the Austrian Navy in the Adriatic fell upon the French as well, a work that proved exceedingly difficult and costly.

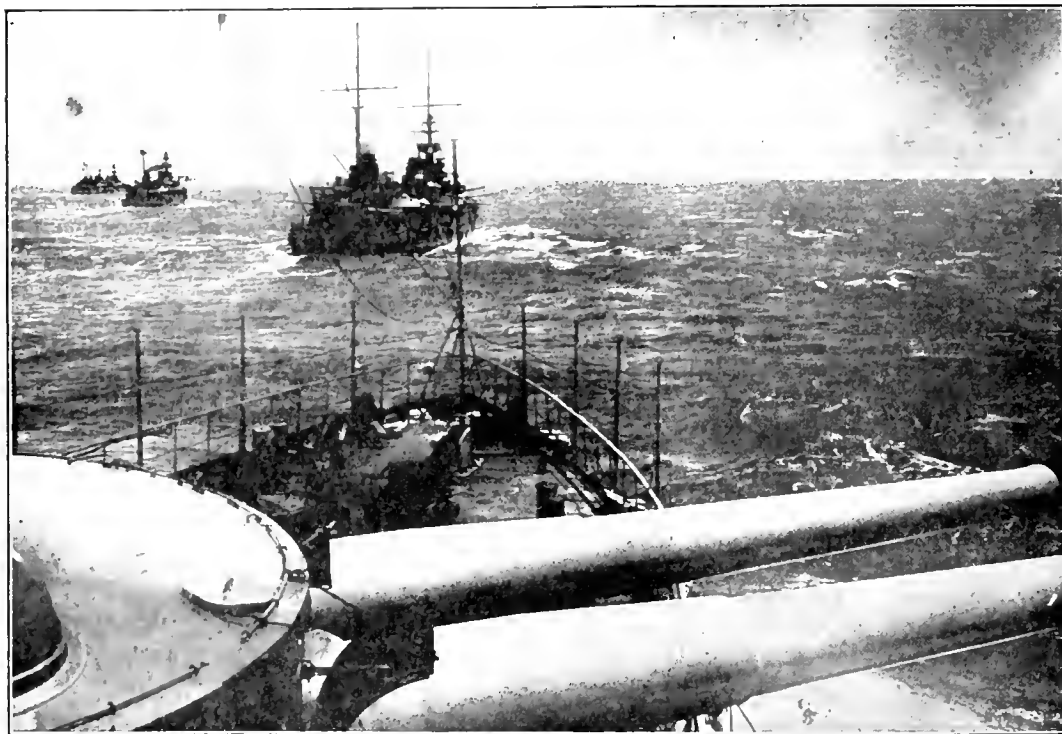
SINKING OF THE *LEON GAMBETTA*

THE French ships were maintaining a blockade between the heel of Italy, Cape Santa Maria di Leuca, and the coast of Albania, at the point where the Adriatic opens into the Mediterranean. A few minutes after midnight on April 27, 1915, the *Léon*

Gambetta was struck by a torpedo from the Austrian submarine U-5. The target was easy, for the cruiser was making only six knots, in a mistaken effort to economize coal, and the moon was nearly full. The torpedo put the dynamo out of running and plunged the entire ship in darkness. A few moments later a second torpedo penetrated the boilers, and in twenty minutes the *Gambetta* had gone to the bottom.

says Commandant Vedel, who has preserved them in his admirable little book *Nos Marins à la Guerre*, which should be graven in letters of gold on the bridges of all French ships of war, with the name of him who uttered them.

"There was no panic. Discipline was preserved. 'Light! light!' was the only cry. The officers were everywhere encouraging and helping the men. The sick and wounded were brought up from the sick bay. In the lower flats officers with pocket-torches were enabling



Underwood and Underwood.

The French Fleet in Battle Array

The tragic but heroic scene on the stricken ship is thus described by the *London Times*:

"Captain André, on the bridge, where he slept, gave orders to fill the starboard compartments, in the hope of keeping the vessel upon an even keel. He awaited death at his post of command, having given all necessary orders for the safety of his company." Admiral Sénès, when he learned that the wireless could not make the S.O.S. signal, encouraged the men to endure and persevere to the last. "To the boats!" was the order. "Be ready, my children! The boats are for you; we officers will remain!" "*Nous autres, nous restons!*"—words,

men to reach the deck and endeavor to escape. One officer, possessing great fortitude, stood up to his knees in water—for the cruiser was heeling 30 degrees to port—calmly lighting a cigar to inspire the men with calmness like his own. Boats were launched, some were broken against the hull, killing some men, injuring others, casting many into the water; floating material was set adrift, and, with splendid order, the ship's company were bidden to save themselves if they could. "*Courage! Nous mourrons ensemble!*" cried the officers to those for whom there was no hope. The admiral, captain and some officers were still clinging to the bridge, whence came the cry,

'*Vive la France!*' which was taken up by the men still on board, and by those in the sea. Then the great cruiser turned, and went down by the head. Of the 137 survivors many were brought to land by the Italian destroyers *Impavido* and *Indomito*. The conduct of every man of the sunken cruiser had been noble, and that of the officers magnificent. Not an officer lived to tell the tale. The story of the sea has few more lustrous episodes than that of the sinking of the *Léon Gambetta*, and happily the survivors made their record of it."

OPERATIONS IN THE DARDANELLES

THE gallant feat of a French submarine commander in the summer of 1915, while British units were coöperating with the Italian in the Adriatic, deserves special mention. Lieutenant Cochin set out to clear an enemy mine field, operating from his submarine. Despite the extraordinary risk of his work, he succeeded in locating the field and in cutting the cables of about 100 mines, which he blew up.

The services of the French in coöperating with the British at the Dardanelles have been discussed in the analysis of that campaign. The responsibility for the conception of the attack and the luckless decision to withdraw when the prize was almost within the grasp of the Allies, rests with the British Admiralty. For the French there can be only full and warm praise for the hearty spirit of coöperation and subordination to British command and for the splendid gallantry displayed under the Tricolor. Not only were their ships of the line, *Suffren*, *Bouvet*, *Charlemagne*, *Gaulois*, taking and giving punishment in the bombardments, but the dangerous work of the destroyer, submarine and minesweeping flotillas was also assumed by the French Navy in coöperation with the British.

On March 15th, for example, the French submarine *Coulomb*, Lieutenant Delègue, made a daylight reconnaissance of the Straits. Having made her way to Kephez and located the batteries there, despite the fire of the Turks, she tried to return to her base. As she changed her course she bumped into something which soon proved to be a mine hooked by its cable on to the bows of the submarine.

Every now and then it bumped the hull of the vessel. To get rid of it she came to the surface, only to have a Turkish airplane swoop down upon her, dropping bombs. Down she went again and crawled along with her deadly burden as well as she could. Rising a second time to the surface, she attracted the notice of a Turkish destroyer which dashed at her full tilt. Another quick dive saved her, and when she at last reached safe water at the mouth of the Strait, she broke the water again with the mine still clinging to her bows. A moment later it obligingly broke loose and floated away, on which it was blown up by a rifleshot. Four other French submarines, not so fortunate as the *Coulomb*, were lost before the enterprise at the Straits was abandoned.

FRENCH BATTLESHIP HITS A MINE

Three days later, March 18th, occurred the heaviest naval attack on the Straits, and as the battleship *Bouvet* was turning back she struck a mine and went down with frightful loss of life. The commander of the *Bouvet*, Captain de La Touche, had stuck gallantly to his post near the Chanak forts; indeed, he had required a second signal from his commander-in-chief before he retired. As she swung about she hit a floating mine that tore a great hole in her starboard side. She listed heavily at once and one of her gun turrets broke away and went by the board. Then she rolled over and sank so quickly that out of her complement of 29 officers and 680 men only 71 were rescued.

It is impossible here to recount all the incidents in which the French Navy bore its part in the Dardanelles. Its service and its spirit were aptly summarized by Admiral Guépratte, the Commander-in-Chief, when he bade his squadron farewell: "To the very end brave officers and men expended themselves without counting their sacrifices, in circumstances nearly always difficult and often under fire of the enemy."

In addition to the problems of convoy already mentioned, which made heavy demands on the resources of the French throughout the war, there was the duty of blockade, for it was important that enemy goods should not enter or leave by way of the Mediterranean under various disguises of neutral flags.

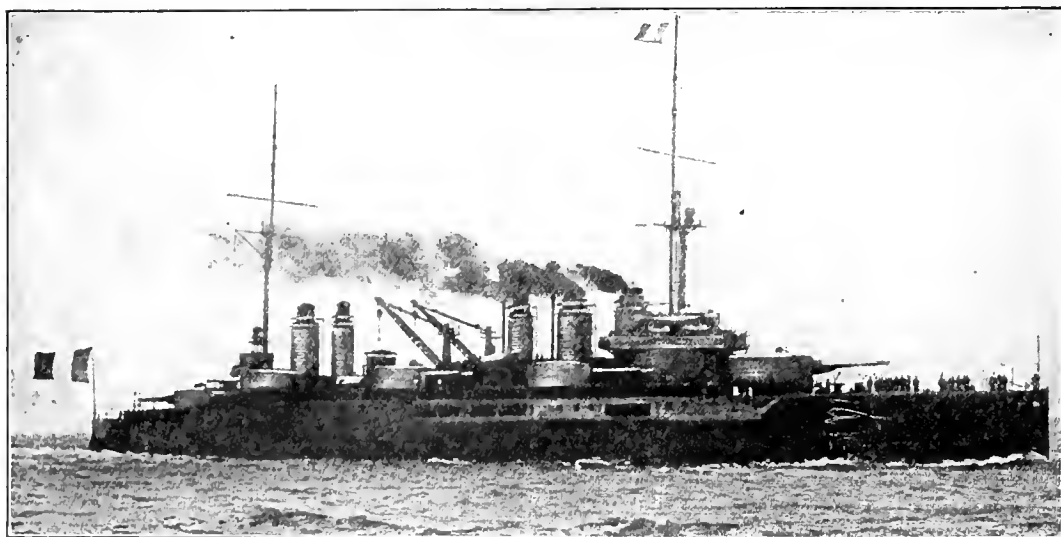
When the Salonika expedition was undertaken, the task of transporting the four divisions of troops, together with its supplies, fell on the French Navy; and as long as it remained there the burden of keeping it supplied with food, ammunition, and other necessities lay on the French.

Meanwhile the Mediterranean was the hunting ground of Austrian submarines, and German ones also that had been shipped overland to Trieste. As the commanders of the surface navies on both sides learned early in the war, no blockade of ships will keep submarines in or out. Despite every precaution,

appearance as strangely mysterious as that of the great American naval collier *Cyclops* the following year.

"FUSILIERS MARINS" DRIVE ON CALAIS

BUT the story of the French Navy was not written on the single page of the Mediterranean. There were detached units in all the oceans on special duties, and some of the most valuable services of all were rendered along the Atlantic coast. If nothing



The French Battleship *Danton*

transports and men-of-war, and merchantmen like the *Ancona*, were torpedoed with heavy loss of life.

For example, the French auxiliary cruiser *Provence II*, loaded with troops and stores for Salonika, was torpedoed by the German submarine *U-35* on the 26th of February, 1916. The big vessel went down in fifteen minutes, carrying down a thousand out of the 1,800 souls on board.

On March 19, 1917, the battleship *Danton* was sunk by a submarine, with the loss of about 300 lives; and the *Suffren*, which had been the French flagship at the Dardanelles, met a more terrible fate. She left Gibraltar for Lorient in November, 1916, and was never seen or heard of again. It was a dis-

else had been done, the magnificent stand of the *fusiliers marins*, or naval brigade, at Dixmude and on the Yser would win for the French sailor a splendid renown.

The Germans, after their check at the Marne, shifted their attack and drove for the Channel ports. They drove with enormous momentum; Antwerp fell, and the remnants of the Belgian Army were in full retreat. It was necessary to send all available forces to check the flood and save Calais. During the fighting before Paris the naval gunners, the *fusiliers marins*, had already seen service. Now they were hurried north to assist the distressed Belgian troops. These sailor men, with their jaunty scarlet-tufted caps, came mostly from Brittany, that part of

France which has always furnished the best of her sea-fighters, whether before the mast or on the quarterdeck, but Brittany had never more reason to be proud of her sons than in those desperate autumn days in 1914.

These sailors reached Ghent on October 9th and, checking the German advance, enabled the Belgians to retire with their artillery. From Ghent the line bent back to Bruges and from Bruges to the Yser, the French naval division coming finally to a halt at Dixmude, which was the pivotal point of the whole defense. The *fusiliers marins* numbered only 6,250, including a machine-gun battalion, they had no prepared positions to occupy, they were called on to defend a line four and a half miles long, they had only light artillery of the enemy, and they had no benefit of air service. They were told, however, that they were expected to hold fast for four days, at the end of which time they would be relieved by reinforcements. The four days became 26 days of tremendous fighting, during which in spite of terrible losses the Breton sailors made a reputation for courage and fortitude that has become a proverb even in a nation that achieved a Verdun. The casualties were about half the number engaged.

It was primarily the superb fighting and endurance of these naval men at the critical point of the line that saved Calais. In recognition of their gallantry it was decreed that hereafter the Navy ashore should carry the colors as well as the Army, and with due ceremony the President of the Republic on January 11, 1915, presented the colors to the survivors of the naval division.

HAPPY SOLDIERS WITH A "FLASH OF DARING"

An appreciation of these gallant Breton seamen from an American who knew them, Mr. Arthur Gleason, appeared in the *Century Magazine*. He writes:

"Here are young men at play. They know they are the incomparable soldiers. The guns have been on them for fifteen months, but they remain unbroken. Twice in the year, if they had yielded, this would have been a short war. But that is only saying that if Brittany had a different breed of men the world and its future would contain less hope. They carry the fine liquor of France, and something of their own

added for bouquet. They are happy soldiers—happy in their brief life, with its flash of daring, and happy in their death. It is still sweet to die for one's country, and that at no far-flung outpost over the seas and sands, but just at the home border. . . . It has been my fortune to watch the sailors at work from the start of the war. I was in Ghent when they came there, late, to a hopeless situation. Here were youngsters scooped up from the decks, untrained in trenches, and rushed to the front; but the sea daring was on them, and they knew obedience and the hazards. They helped cover the retreat of the Belgians and save that army from annihilation by hanging away at the German mass at Melle. . . . These sailor lads thrive on lost causes, and it was at Ghent that they won from the Germans their nickname of '*Les demoiselles au pompon rouge*.' The saucy French of that has a touch beyond any English rendering of 'the girls with the red pompon.' '*Les demoiselles au pompon rouge*' paints their picture at one stroke, for they thrust out the face of a youngster from under a rakish blue sailor hat, crowned with a fluffy red button, like a blue flower with a red bloom at its heart. I rarely saw an aging *marin*. There are no seasoned troops so boyish. . . . The armies for five hundred miles are sober, grown up people, but here are the play-boys of the Western front.

"From Ghent they trooped south to Dixmude, and were shot to pieces in that 'Thermopylae of the North.'

"'Hold for four days,' was their order.

"They held for three weeks till the sea came down and took charge."

PROTECTING THE FRENCH COAST

ALTHOUGH the North Sea and the Channel had been regarded as the sphere of the British Navy, the menace of the submarine made it imperative for France to take active measures of her own for the protection of her coasts and the entry to her ports. What the French Navy accomplished in this theater of the war may be seen from the following summary written for the *Scientific American*:

"The submarine, since the outbreak of hostilities, has been a conspicuous weapon in the hands of the German naval commanders. Its importance as a decisive arm in modern naval warfare had been appreciated, however, many years before the present conflict, by certain

French experts who, realizing that France could never hope to meet Germany on equal terms upon the sea, sought to counterbalance this inferiority by providing her Navy with flotillas of submersibles in sufficient numbers to keep the hostile fleets from venturing too near to the strategic 'Pas de Calais.' But the great surprise of the first few months of the war was that the rôles of the two navies were reversed, and that it was the French who, contrary to expectations, found themselves placed on the defensive and obliged to parry the undersea thrusts of their bitterest foe.

"Just how stupendous was the task that confronted the French Ministry of Marine in 1914, is revealed by the fact that no less than 2,500 guns and gun-mounts and 10,000 sailors have been required to arm defensively the seagoing



An American Patrol Boat in French Waters

vessels of the French merchant marine, not to speak of the armament required for the various types of patrol boats and chasers that, from time to time, have been placed on active service.

"On the outbreak of hostilities the French Navy was concentrated in the Mediterranean Sea, where its specific duty was to contain the Austrian naval forces. This seemed a simple task for the French armada, which comprised 22 battleships, 19 armored cruisers, 12 light cruisers, 84 destroyers, 135 torpedo boats, and 78 submarines. But the presence of the German cruisers, *Goeben* and *Breslau* in the Dardanelles, and the unexpected appearance of commerce-raiding U-boats in the Adriatic, Mediterranean, and Aegean seas, not to mention their sudden incursions into the Bay of Biscay, Straits of Gibraltar, and visits off the coasts of Morocco, Senegal and Syria, soon brought calls for immediate relief and assistance from all parts of the coastline.

NAVAL GUNS TO STOP THE GERMANS

"Unfortunately the French Navy, at that moment, had neither the material nor the personnel to meet the emergency. The events on land, during the first six weeks of the war, had so completely subordinated the operations at sea that everything was sacrificed, everything had to be sacrificed, to snatch victory out of defeat. In the emergency, the Navy was called upon to strip of guns not only its harbor defenses, but also its ships; while 60,000 officers and seamen were transferred to the Army to help stem the German invasion, and several of the navy yards were fitted out as temporary arsenals for the manufacture of munitions for the artillery at the front. The Ministry of Marine, in consequence, found itself compelled to fight an uphill battle against the greatest possible odds, in order to reach the point where it could undertake any offensive tactics against the German undersea pirates.

"The types of vessels employed in the anti-submarine operations were those which were immediately available—tugs, trawlers, yachts, small motor boats—and were necessarily merely makeshifts intended for defensive operations only until better craft could be built on the already crowded ship-ways. But the fishermen of Brittany and Normandy were not slow to show what their little trawlers could do, even if they were inferior in speed and armament to the already formidable antagonists. A little later the appearance of a number of mine-laying submarines caused the French navy commanders to welcome the cooperation of another special class of converted vessel, the mine-sweeper, which, likewise manned by fishermen, has played a most important rôle in the naval conflict.

"The coöperation of aircraft in anti-submarine operations also dates from the early weeks of the war; although it cannot be said that the assistance of the French Naval Air Service was really welcomed or appreciated by the critical merchant skippers, or even by some of the patrol boat commanders, until they had proved their efficiency in the summer campaign of 1915. Since then the heavier-than-air seaplanes have been reinforced by a large number of dirigible squadrons and countless observation balloon centers, which maintain a continuous aerial patrol over the entire coastline and assist the surface craft in keeping the German submarines from executing their attacks with impunity.

ANTI-U-BOAT OPERATIONS

"The fundamental conception of this anti-submarine campaign," wrote a French naval offi-

cer recently, 'and one which failed to foresee the possibilities of submarines with increased cruising radius and more powerful armaments, was apparently based upon the conviction that, if enough patrols, both aerial and surface, could be maintained near the coast, so that no submarine could come to the surface within sight of land without running the risk of being immediately shelled or bombed, the U-boat campaign would be brought to a speedy close. Such an argument would have been admissible if the submarine zone had been limited to restricted areas like the 'Pas de Calais'; but it was not applicable to a campaign conducted in the English Channel and much less to one extended to the North Sea and the Atlantic Ocean. In November, 1917, the American steamer *Rochester* was torpedoed 340 miles west of the Irish coast, while only recently another steamship was sunk 600 miles from land! Mere defensive tactics and inshore patrols alone could never achieve satisfactory or permanent results.'

SUCCESS OF THE CONVOY SYSTEM

"The first reply to this criticism was the institution of the convoy system, which was first put into effect during the fall of 1917. From that moment, the number of sinkings by torpedo and gun-attack diminished perceptibly. Instead of venturing through the submarine zone singly and at frequent intervals, all merchant vessels, no matter what their nationality or their destination, were obliged to sail in company under heavy escort, and compelled to make their voyages according to schedules dictated by the naval authorities. Occasionally a cargo ship was lost, but this soon became the exception rather than the rule, as an examination of the official statements for 1916, 1917 and 1918 shows.

"The organization of the numerous ocean and coastal convoys coincided with the appearance in French waters of a large number of motor-driven submarine chasers, built in the United States for the French Navy. These vessels embody all the desired characteristics of high speed and seagoing qualities, and they have proved ideal '*vedettes de patrouilles*' for the coastal work on which they are employed.

NEW TYPES OF SUBMARINE CHASERS

"Mention should also be made of another type of anti-submarine craft, which in its design and construction is wholly Gallic. This is the 'aviso,' which has its counterpart in the British 'sloop.' In the 'aviso,' the French naval constructors have developed a motor-driven,

ocean-going cruiser, which exceptionally well embodies all the characteristics considered essential to offensive anti-U-boat operations, namely, high speed, heavy armament, high freeboard, excellent sea-keeping qualities, and a maximum steaming radius. The machinery of the 'avisos' may be said to be a product of the war, and it is mainly due to its excellence that these vessels have proved so satisfactory under all conditions of service.

"Before the war, it was thought hardly possible that submarines could ever be used to combat hostile undersea-craft. The events of the past few years, however, have demonstrated that the submarine, under certain conditions, is the ideal type of vessel for meeting the enemy's U-boats on their own terms. We have often heard the old saying: 'Set a thief to catch a



A 110-foot Submarine Chaser

thief.' The Germans made the French realize that it sometimes takes a submarine to catch a submarine. As a French submarine commander summed up the situation: 'The U-boats used to enjoy the advantage of remaining themselves invisible, while all the surface and aerial craft which were sent in pursuit of them were boldly outlined against the sky and visible to them. This is one of the reasons why we are now using our submarines to ambush their U-boats. We have been quite successful, and we shall continue to pay them back in their own coin. And that is a great deal, when you consider how ill equipped we were for this work when the Boches sprung their U-boat campaign on us.'

It was this outstanding fact of the U-boat, and a ruthless U-boat at that, which made the naval problem in the war so desperate for the Allies, even while they exercised the con-

trol of the sea. It was absolutely essential to have that control; the sea lines of communication were the arteries of the Allied cause, but the submarine slashed at those arteries and bled them sorely before it was conquered. Large as the British Fleet was, it was wholly unequal to the strain involved

by this kind of warfare, and it was due to the loyal and zealous coöperation of the lesser navies of France, Italy, and later of America, which made possible the final mastery of the sea. The services of the American Navy in this cause are dealt with in the preceding section.

SECTION VII—THE GREAT SURRENDER

END OF GERMANY AS A SEA POWER

Bolshevism Thrown into Russia Rebounds into Germany, and the German Fleet Surrenders for Lack of Iron in the Men

IT had always been the scornful boast of the Germans that their discipline in Army and Navy was vastly superior to that in any other nation's services. It was a discipline that stood the test of battle on sea and land but it crumbled and went to pieces before the severer test of prolonged inaction. As the fate of Germany was being written in large and fiery letters during October, 1918, there were many who believed that the German Navy would come out for one desperate grapple with their enemies and go down fighting. It was inconceivable that the comrades in arms of von Spee, who disdained to surrender although opposed by hopeless odds, would be willing to submit the entire German Navy without a single blow struck for honor. And yet that is precisely what happened.

THE REVOLT IN THE GERMAN FLEET

It is a strange irony of fate that the revolt of the fleet was brought about by the very plague that the Imperial Government had taken pains to introduce into Russia—Bolshevism. Bolshevism did for Russia what was hoped of it by the Germans, but like any other pestilence it had no respect for frontiers, and it returned to destroy the German Empire. The Navy was a more fertile field for the seeds of revolution than the Army because the mechanical character of modern

ships of war had demanded for recruits not the peasants of the country but the mechanics and factory workers of the cities. It was in this class that Socialism had always found its disciples before the war, and although the red flag had been hauled down in favor of the Imperial eagles in the earlier stages of the war, when things looked bright for the German cause, later on, when there was no mistaking the end, the Socialists rediscovered their doctrines. Scheidemann, the leader of the majority Socialists, had been throughout the war the most docile servant of the Kaiser that the stiffest Junker could desire. But as the "Reds" gathered headway toward a revolution in the autumn of 1918 he made a quick jump for the band wagon and became a revolutionist almost over night.

The beginnings of the Revolution originated in the enlisted men of the Navy. Already socialistic in tendencies, they had ample opportunity to work themselves up to the pitch of Bolshevism. The greatest enemy of morale is inaction, and save for the men who formed the crews of the U-boats,—who were being lost with greater and greater frequency,—the rest of the personnel were simply cooped up in barracks ashore with nothing to keep them interested. One vital thing the German lacked—athletics. American crews held in inaction for a long time would have a series of baseball matches, boxing contests, and the like, which would keep things lively on board



© Brown Bros.

Transferring a German Submarine Crew to a British Ship After the Surrender of the German Navy

every ship; and it would be an interesting matter for some future historian to speculate on whether, if the Germans had known the blessings of baseball, there would have been any revolution in October, 1918. At any rate the splendid morale represented by the crews of von Müller or von Spee degenerated into red mutiny under the years of idleness and barrack life that followed the battle of Jutland.

GERMAN NAVY IN HANDS OF MUTINEERS

ACCORDING to the correspondent of the *London Telegraph*, the German revolution of November, 1918, had its starting place in the mutiny of the sailors at Wilhelmshaven. He tells this story:

"In the early hours of the morning of Thursday, October 31st, the Admiral commanding the

German High Seas Fleet signaled the order 'Seeklar' (be ready to put to sea), and it was suspected from end to end of the fleet that this meant a last desperate attempt to fight the British Navy. The captain of the battleship *Thuringen* committed the indiscretion of turning this suspicion into certainty. Assembling the whole crew of his vessel, he addressed to them a highly patriotic speech which ended thus: 'We will fire our last shot and then we will perish like heroes with our flag flying.' But the crew of the *Thuringen* had no desire to perish heroically; on the contrary, they were determined not to allow themselves to be dragged into this mad adventure. First they sent a deputation to their captain to remonstrate; while this was taking place, all fires were extinguished and the engine-holds were flooded with water, and communication was established with the crew of the battleship *Helgoland* next in line. Soon after sunrise on October 31st the whole of the crews of the *Thuringen* and the *Helgoland* were in open mutiny.

"The Rear-Admiral commanding the First Squadron of Battleships, flying his flag on the *Ostfriesland*, sent boats alongside the two rebel ships to take off the officers, who were allowed to depart unmolested. The Admiral then signaled to *Thuringen* and *Helgoland* that both would be torpedoed unless they surrendered immediately. The other battleships were withdrawn to a distance, and two large torpedo-boats, *B97* and *B112*, appeared on the scene ready to discharge their torpedoes on receiving

Fleet which revealed the impossibility of putting to sea. Twenty-four hours later most of the crews and the whole of the marine garrison of Wilhelmshaven were in open revolt. Their reinforcement on November 2nd by the crews of the Third Battleship Squadron, which had been sent from Kiel to Wilhelmshaven to quell the movement, and by large numbers of men just brought back from the coast of Belgium, made the rebels masters of the situation. Emissaries were sent to Kiel, and all the fleet men at that port joined



German Submarines at Scapa Flow Ready To Be Surrendered

the expected signal from the flagship *Ostfriesland*. The crews of the two torpedo boats, whatever they may have felt, showed no signs of refusal to obey the order to blow up their comrades on the two battleships, numbering more than 1,500. At this critical moment, the *Thuringen* signaled her surrender, and the *Helgoland* immediately followed suit. All the mutineers were transferred to transports and conveyed without delay to Wilhelmshaven to await their trial.

CREWS IN OPEN REVOLT

"On the same day, October 31, there were smaller troubles on other ships of the High Sea

the movement with enthusiasm. These events succeeded each other rapidly on October 31st, November 1st and 2nd. Cuxhaven, Brunsbüttel, Emden, and Lübeck fell successively into the hands of the mutineers; everywhere the officers were powerless to stem the tide, and for the most part they submitted without open resistance. In a few cases officers who resisted were shot and their bodies were then thrown into the sea.

"By the evening of November 2, nine-tenths of the German Fleet and all the naval ports from Kiel to Emden were in the hands of the mutineers, and Germany's Navy had for all practical purposes ceased to exist. Prince Max-

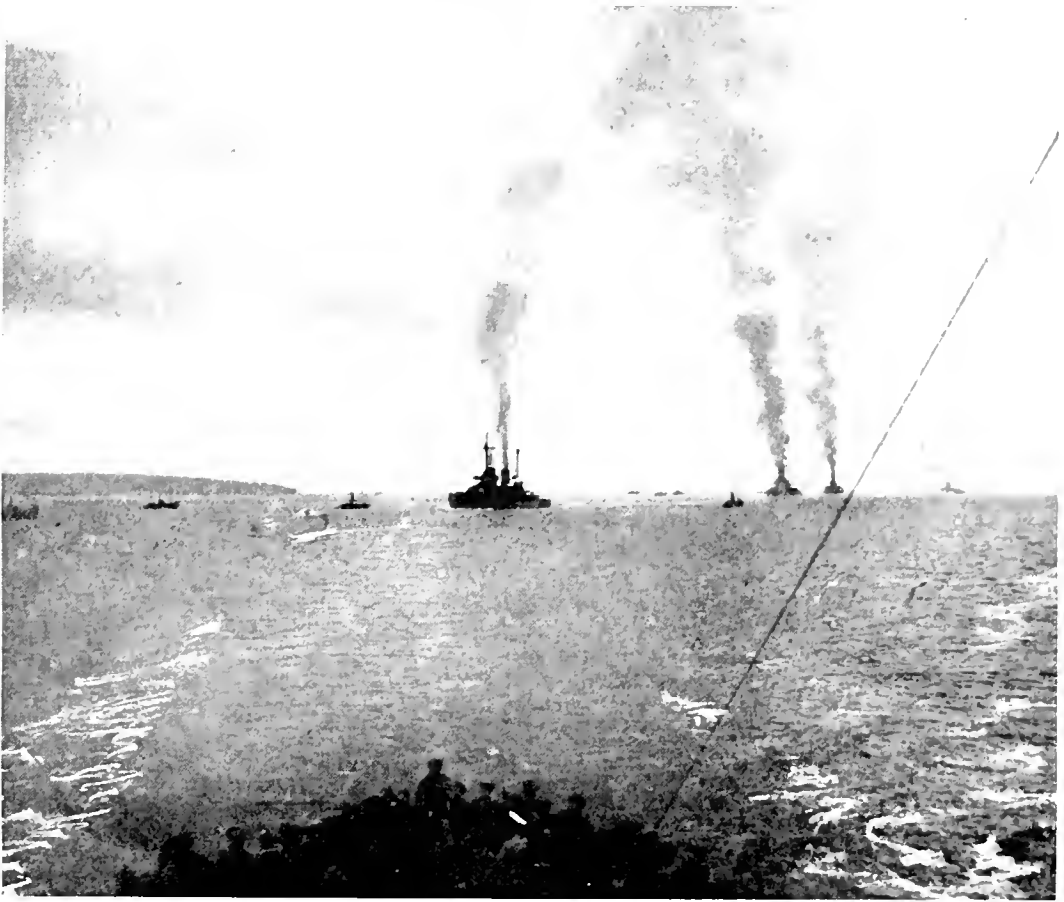


Photo by Hunter

The End of the Chapter

The German battle cruisers passing in through the nets at Scapa Flow preliminary to the surrender; the *Seydlitz* is leading.

imilian, of Baden, who was then Chancellor, seems to have used his influence to prevent the dispatch of troops to attack the rebels, acting thus under the influence of Scheidemann and Erzberger, who advised strongly against violent measures. The Radical member of the Cabinet, Herr Conrad Haussmann, was sent to Kiel to try to negotiate with the men, but he returned to Berlin within a few days without having achieved any result. The rebel seamen, with a view to strengthening their position and preventing reprisals, quickly sent emissaries to Berlin, Munich, and the other large towns to stir up the Socialists and to stimulate other revolutionary movements in the different centers, and it can now be stated as an established fact that the men of the fleet not only carried out their own revolt successfully, but were mainly instrumental in spreading the contagion of sedition

to the civilian population inland and to the Army at the front."

THE SURRENDER ARRANGED

THE immediate sequel of the revolution was the collapse of all military resistance on the part of Germany and the consequent armistice which ended the war. The details of the surrender of military supplies being left to General Foch, it was inevitable that those of the surrender of the naval units should be arranged by Admiral Beatty. The following picture of the conference between Admiral Beatty and the representatives of the Germany Navy for this purpose comes

from a German source, translated for the *Living Age*:

"We have received the following details from a reliable source concerning the meeting of the representatives of the German Navy with the English Admiral Beatty at Rosyth. The English Admiral had sent a personal message by wireless to the Admiral of the German Fleet, von Hipper, to dispatch a flag officer of the German Navy to Rosyth in order to make further arrangements. The German Admiral thereupon nominated Vice-Admiral Meurer for this purpose. Accompanying Vice-Admiral Meurer were Korvettenkapitän Hintzmann, Leutnant zur See Braunek, and a deputation of the Soldiers' Council of the High Sea Fleet, and of the Republic of Oldenburg and Ostfriesland. The deputation left Wilhelmshaven on board the *Königsberg* on November 13th at 3 p.m. The journey was made by way of Skagen, in order to avoid the mine-fields in the North Sea. They arrived at Rosyth on November 15th at 7 p. m. The *Königsberg* anchored in the outer roads. Immediately she anchored, an officer belonging to Admiral Beatty's staff arrived on board the *Königsberg*, with a letter from the English Admiral, requesting Admiral Meurer, with his staff, to come on board the English flagship *Queen Elizabeth*, which was lying at anchor in the inner roads. The English destroyer *Oak* was ready to take them across. The names of the members of the German deputation had been made known to the English Admiral by wireless. When Vice-Admiral Meurer in-

quired whether the three representatives of the Soldiers' Council of the High Sea Fleet were to accompany him, the English officer refused permission for them to do so in the name of Admiral Beatty. The three representatives were therefore obliged to remain on board the *Königsberg*.

"A meeting was at once held on board the English flagship under the presidency of Admiral Beatty. In addition to the latter, there were Admiral Madden, Admiral Tyrwhitt, the Chief of Staff of the English Fleet, Vice-Admiral Brock, and a number of officers belonging to the English Staff of the fleet. Admiral Beatty read out a list of the conditions of the armistice, and stated that he had been commissioned by the Entente and the United States to settle all naval questions relating to the armistice. When Vice-Admiral Meurer informed him that there were three representatives of the Soldiers' Council of the High Sea Fleet and of the Republic of Oldenburg and East Friesland on board the *Königsberg*, Admiral Beatty refused to have anything to do with them, as he had not been authorized to receive representatives of a government which was not recognized by the English Government. At the second meeting on November 16, Vice-Admiral Meurer answered the questions put to him by Beatty, whereupon a discussion of individual points took place. In the final document, drawn up after the final sitting on November 16, evening, the arrangements for handing over the submarines and the ships and torpedo boats to be interned were laid down, as well as a number

MAJOR UNITS OF THE SURRENDERED GERMAN FLEET

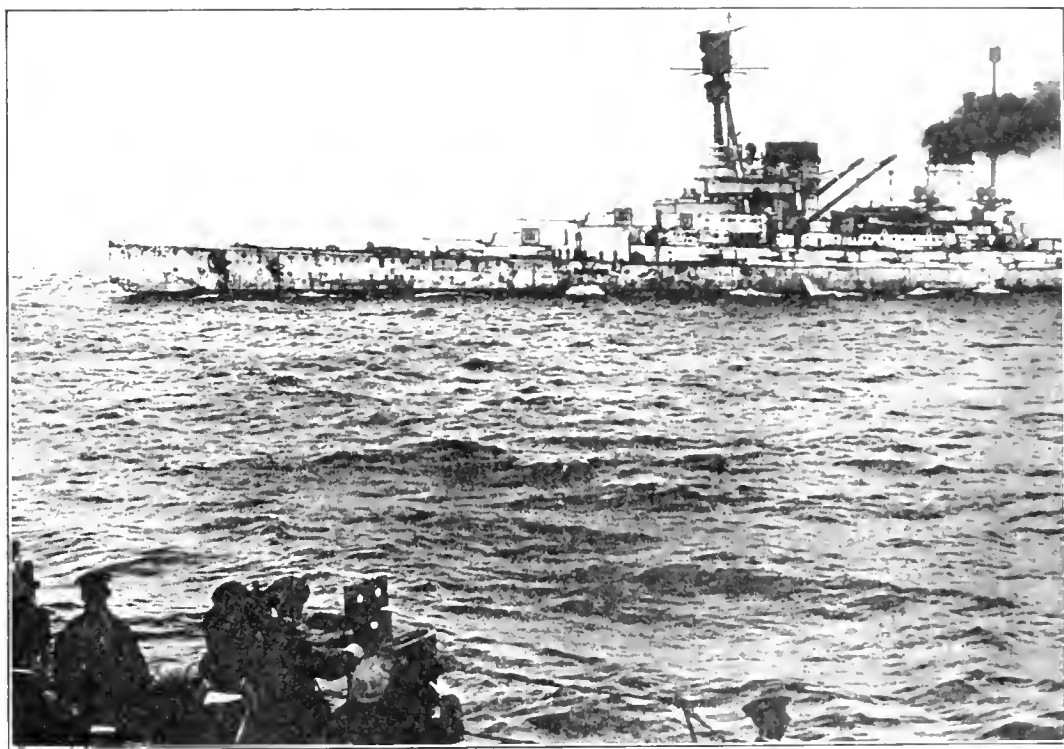
Dreadnoughts	Displacement	Speed	Best Armor	Guns	Date of Completion
<i>Bayern</i>	28,000 tons	22.5 knots	14-inch	8—15"; 16—5.9"; 12—3.4"	1917
<i>Grasser Kurfürst</i>	25,800 tons	22 knots	13 ³ / ₄ -inch	10—12"; 14—5.9"; 10—3.4"	1915
<i>Markgraf</i>	25,800 tons	22 knots	13 ³ / ₄ -inch	10—12"; 14—5.9"; 10—3.4"	1915
<i>Kronprinz Wilhelm</i>	25,800 tons	22 knots	13 ³ / ₄ -inch	10—12"; 14—5.9"; 10—3.4"	1915
<i>Kaiser</i>	24,500 tons	23 knots	13 ³ / ₄ -inch	10—12"; 14—5.9"; 12—3.4"	1912
<i>Kaiserin</i>	24,500 tons	23 knots	13 ³ / ₄ -inch	10—12"; 14—5.9"; 12—3.4"	1913
<i>König Albert</i>	24,500 tons	23 knots	13 ³ / ₄ -inch	10—12"; 14—5.9"; 12—3.4"	1913
<i>Friedrich der Grosse</i>	24,500 tons	23 knots	13 ³ / ₄ -inch	10—12"; 14—5.9"; 12—3.4"	1913
<i>P. Regent Luitpold</i>	24,500 tons	23 knots	13 ³ / ₄ -inch	10—12"; 14—5.9"; 12—3.4"	1913
Battle Cruisers					
<i>Hindenburg</i>	27,500 tons	28 knots	12-inch	8—12"; 12—5.9"; 12—3.4"	1916
<i>Derfflinger</i>	26,500 tons	27 knots	12-inch	8—12"; 12—5.9"; 12—3.4"	1914
<i>Seidlitz</i>	25,000 tons	28 knots	11-inch	10—11"; 12—5.9"; 12—3.4"	1913
<i>Moltke</i>	23,000 tons	28 knots	11-inch	10—11"; 12—5.9"; 12—3.4"	1912
<i>Von der Tann</i>	20,000 tons	27 knots	9-inch	8—11"; 10—5.9"; 16—3.4"	1910
Scout Cruisers					
<i>Bremse</i>	4,100 tons	35 knots	.....	4—5.9"; 8—4.1"	1918
<i>Brummer</i>	4,100 tons	35 knots	.....	4—5.9"; 8—4.1"	1918
<i>Emden</i>	5,400 tons	30 knots	.....	10—5.9"; 4 anti-aircraft	1916-17
<i>Karl-ruhe</i>	5,100 tons	30 knots	.....	10—5.9"; 4 anti-aircraft	1916-17
<i>Nürnberg</i>	5,100 tons	30 knots	.....	10—5.9"; 4 anti-aircraft	1916-17
<i>Frankfurt</i>	5,100 tons	30 knots	.....	10—5.9"; 4 anti-aircraft	1916-17
<i>Köln</i>	6,300 tons	33 knots	.....	2—8.2"; 6—5.9"	1916-17

of questions to be settled by the German delegates on their return home. It is worthy of note that Admiral Beatty stated that he would forego, for the present, Article 24 in the armistice terms relating to the occupation of the Baltic fortresses, provided that Germany would immediately take steps to remove the mines from the Baltic."

no parallel in history, and is worth seeing through the eyes of more than one who witnessed it.

A GERMAN NAVAL OFFICER'S DIARY

The following is the diary of one to whom this version of *Der Tag* must have been gall



© Brown Bros.

The Surrender of the Battle Cruiser *Hindenburg*

A GERMAN ACCOUNT OF THE SURRENDER

IT was not long before the war that Kaiser William declared to his Navy, "The future of Germany lies on the sea!" To make good that statement a Navy had been built second in power only to that of Great Britain. Once, at Jutland, it met its enemy in full force, and gave a good account of itself. When again it met the British Fleet it was in abject surrender, battleships, battle cruisers, destroyers, submarines,—all filed into British waters without a single shot, a line of prisoners many miles in length. The scene, as enacted on November 21, 1918, has

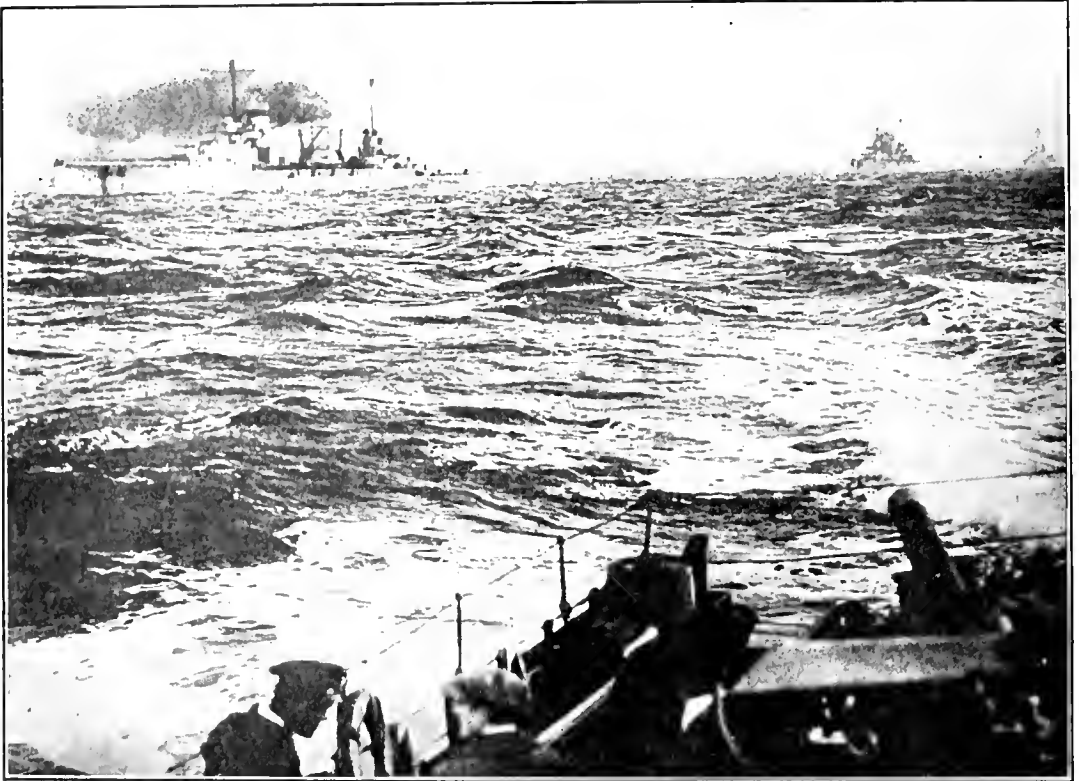
and wormwood, a German naval officer. Printed originally in the *Tägliche Rundschau*, it was translated later for the London *Times*. The writer seemed to cling for comfort to the idea that his navy was still "undefeated."

"Sunday, November 17.—Clouds of smoke and soot lie over the war-harbor. If one walks through the streets one arrives home quite black! the fleet is getting up steam. The Wilhelmshaven people are accustomed to this dirt. It was often so during the war when the fleet was suddenly going out for some undertaking or the enemy was reported out at sea by our aircraft and advance patrols. But to-day it is quite different; the High-Sea Fleet is

beginning its last cruise—surrendering to the enemy! For four years I have shared victory and want with my crew, and I won't leave them in the lurch at the end. Going on board is hard. The red flag is still flying there, a sign of all that has collapsed in these last weeks. The crew is serious and quiet; most of them feel how great is the disgrace.

"Monday, November 18.—In the Schillig Roads. Coming through the locks, we have

at this time of year. No lookout for submarines now, and no manning of the guns. At night there is a bright stream of light from every ship, and I no longer have to gaze into the darkness trying to espy the enemy. . . . I can not stop asking myself how we have earned such an end, and whether all our brave seamen are lying for nothing at the bottom of the sea. Who can give an honest answer? What is the truth?



© Brown Bros.

The Surrender as Seen from a British Destroyer

hoisted our war-flag and pennant once more. Everybody on board has the feeling that it looks better and more dignified than the red flag. . . . The undefeated German Fleet is going out to meet the enemy who anxiously avoided it for four years, and says to him: 'Here, take us; you have won the game only too brilliantly, and as you can not have imagined in your wildest dreams.' I went, and I am not ashamed of it.

"Tuesday, November 19.—Soon after noon we put to sea. Not racing ahead as before, but crawling slowly. We must save as much fuel as possible. The North Sea is seldom so calm

"Thursday, November 21st.—On Wednesday morning one of our destroyers struck a mine and sank. Many are already lying down there, and many more will follow when the mine-sweeping begins again. At eight o'clock we are at the appointed place. The first English destroyer soon comes in sight. My heart beats furiously. If we had still had our torpedoes on board I think that that destroyer would have known it. So it is a good thing that we left every weapon behind. The destroyers surround us on every side; we are a procession of prisoners. Our large ships are convoyed in the same way by the English battleship and

cruiser squadrons. The English stood at their battle-stations with gas-masks on. They simply could not understand that we should surrender without a blow. The English ships are freshly painted. The men are in their best clothes. Everything is arranged to impress us. Slowly we proceed to our anchoring place in the Firth of Forth. Nothing to be seen of the land; typical English fog. Airmen circle round us, playing all sorts of games. One of them who intended to make a particularly bold movement falls straight into the sea. An airship also, wobbling clumsily, feels it necessary to show us—how well-built our *Zeppelins* are.

"*Friday, November 22nd.*—The search commission is on board. I speak with the English officers only to say what is absolutely necessary. With me they will have no occasion to disobey their strict order not to fraternize with the Germans. Apparently they are less concerned to discover whether we really have no ammunition and weapons on board than to spy out our equipment. They have little luck in this. All the things which they would so much have liked to see, and about which they constantly asked—instruments for measuring distance, electrical apparatus, and especially the 'smoke' apparatus—stayed behind at Wilhelmshaven. So they can only observe that we have very pretty guns. For a long time they racked their brains about certain other parts of our armament, the use of which they do not understand. 'Unhappily' I do not know enough English to explain. To-day my English is for the most part limited to 'yes' and 'no.'

"*Sunday, November 24th.*—The German Fleet is being taken to Scapa Flow. There is no further question of our going to a neutral port. If it must be an English port I like Scapa Flow best, for up there there is at least no mob to laugh at us.

"*Monday, November 25th.*—Scapa Flow is a splendid harbor, well protected on all sides. The entrance is secured by nets and mine-barriers. On shore the huts of the natives are about as high as a good German dog's kennel. The English have been lying here for four years. That must have been pretty uncomfortable. It is all the stranger to see how little this naval base has been developed. There is only one miserable little dock, and a few small workshops: there is no pier for destroyers. . . . I am relieved by the order that only one officer and nineteen men are to remain on board every destroyer. So I must leave with most of the crew. Almost all those who stay behind have volunteered—partly out of affection for the destroyer, and partly because they hope not to

return to Germany until conditions there are normal again.

"*Monday, December 2nd.*—An English battleship lies not far from us. We see the English sailors on board parading from nine to twelve. We did not do that even in times of deepest peace. Our men are astonished. Those, then, are the sailors who, as we were told, had turned back from an undertaking against Germany and had hoisted the red flag! . . . Tomorrow the German steamer will arrive which is to take us back to Wilhelmshaven."

AN AMERICAN NAVAL OFFICER AT THE SURRENDER

STILL another view of the great surrender comes from an officer of the American Naval Reserve, Lieut. F. T. Hunter, whose narrative appeared in the *World's Work*:

"On the twenty-first day of November, 1918, at 10.38 a. m., there flashed by wireless from Sir David Beatty's flagship *Queen Elizabeth*, a signal:

"To Admiralty, from Commander-in-Chief, Grand Fleet.

"The Grand Fleet met this morning at 0920, five Battle Cruisers, nine Battleships, seven Light Cruisers, and forty-nine Destroyers of the High Sea Fleet which surrendered for internment and are being brought to Firth of Forth.

"Four years had passed. Some hundred thousand men had waited in vain. Waited, watched, served, and striven—in vain. Day after day their incessant drills, studies, toils, had brought their finished product up to heights un hoped for in the days of peace. Time after time the long lines of gray monsters had slipped hopelessly out, searched, tempted, and save once, had cruised in vain.

"Small wonder that four a. m. of November 21, 1918, found few asleep in all the fleet. *This* was the day! No secrecy; no doubt. The world knew. The King himself had come but yesterday to acclaim the triumph that must be ours to-day. Too vast a situation well to comprehend—the German High Sea Fleet had sailed from Kiel! And the King had come. Our own Admiral Sims had come. Hundreds of strangers were aboard our ships. A flush of excitement covered every face, held back by a forbidding silence that seemed to suspend the very earth.

"Out of the Firth; out of the fog. Gray ships in a gray dawn. Ships and ships and ships, as far as the eye could see, ahead or astern. Great monsters rising and falling on the incoming swells, by their very stateliness acclaiming victory. At four a. m. our general alarm clanged harshly against the quiet dawn, producing on the great ship the same effect as a club on a quiet beehive in the summer sun. All hands to battle stations! A few moments bustling rush—then quiet again. Quite different now. Each gun is manned. Every man is at his post. The powder bins are filled and shells are up. Range finders scan the horizon, and lookouts swing their glasses in wide arcs for smoke. Three decks below the water line men sit with 'phones, tubes, boards, pencils, and strange instruments, connected with the conning tower. The plotting room. The center of control of fire. No 'Wooden Horse of Troy' for Admiral Beatty. Not the slightest chance for Hunnish trickery. The destiny of nations is at stake. He has the German guarantees—but he treats them as the German would, 'Mere scraps of paper.' Perhaps they seek to take the Grand Fleet unawares? They will find them firing deadly salvos thirty seconds after the first sign of treachery. The Grand Fleet steams on.

"At last dawn comes, blazing red. A low haze cuts the visibility to five short miles, but the rising sun reveals a new disposition of our forces. Admiral Beatty has divided his ships into two great lines—the Northern and the Southern. These two lines, proceeding on parallel courses, about two miles apart, will permit the German Fleet to pass down their center. A 'Ships right and left about' will then bring both lines steaming in inverted order toward the Firth of Forth, the German line between. Either of our lines, without the other, could engage the surrendering German Fleet successfully.

"On we steam at twelve knots to point 'X' in the North Sea. Eight bells strike clearly. We know the great moment is not far distant now, and by the imposing spectacle are reassured. At last:

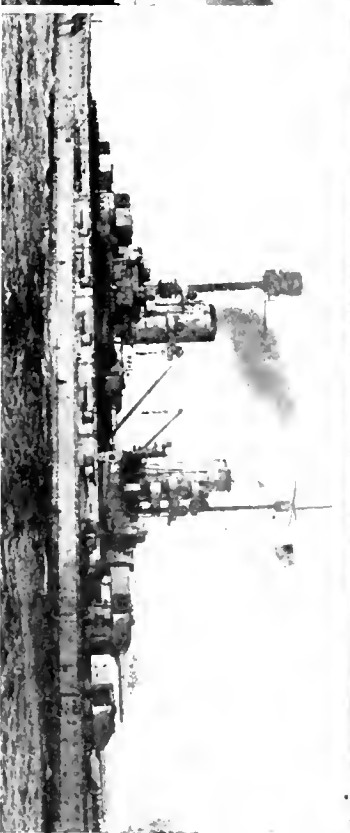
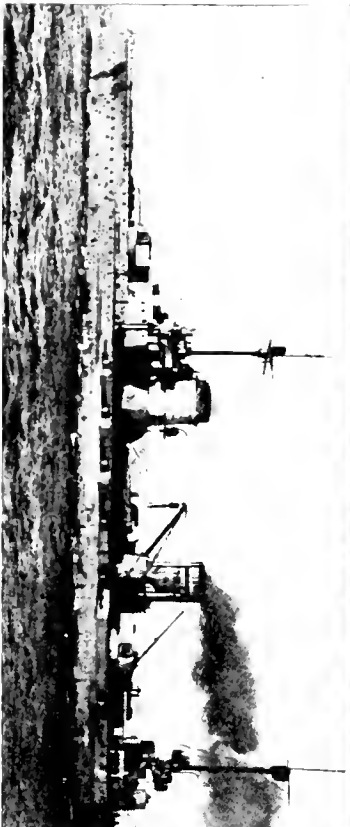
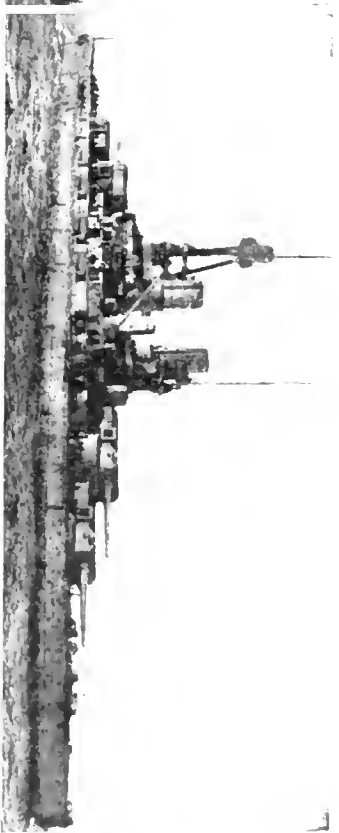
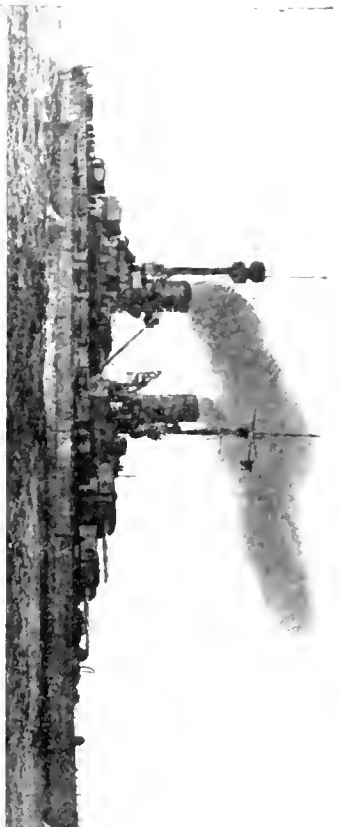
"'Sail ho!—from the foretop lookout. 'Where away?'—from the bridge. 'One point off the starboard bow,' in reply. 'Can you make it out?' 'Dense smoke, sir, seems to be approaching.'

"A SIGHT FOR KINGS!"

"Twenty-five minutes later the tiny light cruiser *Cardiff*, towing a kite balloon, leads the great German battle cruiser *Seydlitz*, at the

head of her column, between our lines. On they pass—*Derfflinger*, *Von der Tann*, *Hindenburg*, *Moltke*—as if in review. The low sun glances from their shabby sides. Their huge guns, motionless, are trained fore and aft. It is the sight of our dreams—a sight for kings! Those long, low, sleek-looking monsters which we had pictured ablaze with spouting flame and fury—steaming like peaceful merchantmen on a calm sea. Then the long line of battleships, led by *Friedrich der Grosse*, flying the flag of Admiral von Reuter, who is in command of the whole force. *Koenig Albert*, *Kaiser*, *Kronprinz Wilhelm*, *Kaiserin*, *Bayern*, *Markgraf*, *Prinz Regent Luitpold*, and *Grosser Kurfürst* followed in formation—powerful to look at, dangerous in battle, pitiful in surrender. We gaze with wonder on this spectacle—the end of four years' vigil; the banishment of Germany's sinister dream of sea power. This, then, is the end for which the Kaiser has lavished his millions on his 'incomparable' Navy! A Navy powerful enough to conquer all the navies of the world combined—bar the British. But when the British combined with all the others against him, that tolled his doom. For sea power, slow in its working, must ultimately prevail.

"Strangely enough the German surrender lacked the thrill of victory. There was the gaping wonder of it, the inconceivable that was happening before our very eyes—the great German Fleet steaming helplessly there at our side—conquered. Conquered, but not in the spectacular way that we would so gladly have given our lives to see. The one prevalent emotion, so far as I could ascertain, was pity. It carried even to our great Commander-in-Chief, who I believe was the least thrilled and most disappointed person present. In speaking to us after the surrender he remarked: 'It was a most disappointing day. It was a pitiful day, to see those great ships coming in like sheep being herded by dogs to their fold without an effort on anybody's part.' And no one of his audience dissented. They were as helpless as sheep. About two hours' vigil satisfied our commander that such was the case, and we secured battle stations. Later investigation showed that all our precautions were quite unnecessary. Not only had the powder and ammunition been removed from the German ships, but their range finders, gun sights, fire control and very breech blocks as well. They came mere skeletons of their former fighting selves in a miserable state of equipment, upkeep, and repair. For example, in passing May Island, at the entrance of the Firth of Forth, Admiral Beatty signaled one of the German squadrons to put on 17 knots and close



Germany Surrendered Nine Dreadnoughts and Five Battle Cruisers

On the left: The *MacKornel*, the *Seydlitz*, the *Von Der Tann*. On the right: The *Bayern*, the *Grosser Kurfürst*, and the *Hindenburg*.

up in formation. The reply came to him, 'We cannot do better than 12 knots. Lack lubricating oil.' What chance, then, of a modern engagement where a speed of at least 18 knots is sustained? Apparently they were no better off for food. Hardly had they anchored when the crews turned to with hook and line to catch what they might for dinner."

peace of the humbled bully of the seas. The Grand Fleet was playing the part of a colossal policeman, tolerant, good-humored, but intent on his job—that of restraining the peace-breaker for his own good. In the days that I have been living in the fleet, while it buckled on its belt and truncheon, I never heard a vainglorious boast or the note of vulgar triumph.



© Brown Bros.

The 50 German Destroyers Coming Up for Surrender

"AN UNPARALLELED HUMILIATION"

IT is appropriate that perhaps the fullest word on the spectacle should come from an officer of that Navy to which the Germans bowed in defeat. The following is the narrative of an officer of the *Thunder*. (F. Perrot), as it appeared in the *Manchester Guardian*, and reprinted in this country in *The Living Age*:

"Long before dawn broke over the misty reaches of the Forth the great fleet slipped away to sea. The mightiest armada the world has ever seen—beyond the imagination of man to grasp its terrible concentration of power—went out quietly on a mission essentially peaceful. It was to take possession for the world's

240 BRITISH SHIPS IN LINE

"What was the fleet now starting on the most astonishing errand in history? A few numbers and names will give a faint conception. Two hundred and forty British ships of war were arrayed, and stole seawards in one immense line—one line as far as open water, and then in two lines six miles apart, so as to be ready to take the Germans into their midst and escort them decently and in order to their resting place. First in place were the First, Second, Fourth, Fifth, and Sixth Battle Squadrons: dreadnoughts and super-dreadnoughts every one, —thirty-three in all. Sir David Beatty, Commander-in-Chief, flew his flag on the *Queen Elizabeth*. Then came the First, Second, and Third Battle Cruiser Squadrons: eleven ships with famous names sounding like trumpets of Empire—*Lion*, *Tiger*, *Renown*, *Repulse*, *Princess Royal*, *Aus-*

tralia, New Zealand, Indomitable, Inflexible, Glorious, Courageous—six squadrons of light cruisers: the fierce, swift harriers of the sea—thirty ships all told. There were great ships outside this classification—that strange creature *Furious*, the seaplane carrier; the armored cruiser *Minotaur*, come up north, having finished her convoying business, to be in at the painless extinction of the German Fleet. There was *Gaston*, the destroyer flagship, and *Champion*, and then in a thick swarm at the tail of the Grand Fleet were the destroyers, one hundred and sixty of them, mostly war creations.

FIVE YANKEE MEN-OF-WAR

"As we went down we picked up from their station below the bridge the five American battleships that have been doing comradely service in northern waters with Admiral Beatty's fleet—the flagship *New York*, *Texas*, *Arkansas*, *Florida*, and *Wyoming*. Their strange cage masts loomed weirdly in the moonlight. There were French representatives, too, of the floating League of Nations. The high-backed cruiser *Amiral Aube* and a few of their many-funneled destroyers came up from the Dover patrol by way of a holiday. Their job was done with the ever-glorious bottling operations on the Belgian coast.

"We were taking no risks to-day. Every ship in the Allied Fleet went out to meet the Germans, ready for instant battle if need be, cleared for action. The order was that the guns were to be 'in securing position,' the ordinary fore and aft arrangement, but the men on my ship, the battleship *Monarch*, told me that thirty seconds from the flashing of a signal was all that they needed to pour a broadside into anything that wanted it. These guns were last fired at the foe in the mirk of Jutland night while we were escorting the Germans home.

"I went below into one of the 13.5 turrets, and found every man in his place ready to ram the shell home and fire the great weapon. But the target was too easy; there was nothing doing.

"Heavy fog lay thick on the North Sea the previous week—fit emblem of the twilight of German power. It lifted that morning. When the fleet put out there was good visibility up to three miles, sufficient to reveal the whole of the pageant, or what of its mighty extent any one pair of eyes could see. A chill and haggard dawn was breaking when I first looked out from the *Monarch's* bridge on the tumbled sea, leaden like the sky. We were just passing May Island at the entrance to the Firth of Forth, bleak

and black, its light staring at us. The moon gleamed through a cloud-rift. Behind our ship, and before, the intermittent glare of ships' signals was the only sign that we were one of a far-stretching procession. . . .

"THAT'S THE QUEEN ELIZABETH

"We were forging slowly ahead. The navigating officer at my side said: 'It's odd to be going at this speed after four years of war. Makes me feel it's peace at last more than anything—we're so used to high speed and vigilance. And it's queer, too, to be coming out without a swarm of escorting destroyers.' The day brightened, the sun rose out of a great bank of cloud, and more and more of the fleet came into view. Three miles to the south in a light haze the second line of battleships, a broken line as yet, became visible. In among the majestic men-o'-war an inquisitive tug had nosed herself, determined to be in at the show. From the misty distance one especially noble shape became definite. All glasses were leveled. 'That's the *Queen Elizabeth*. Look, she's flying three ensigns as broad as a house.' Her flags stood out stiff in the breeze, expressing, as with a gesture, the ship's pride of place.

GERMAN FLEET IN SIGHT

"About 9.30 precisely came the great moment—the first glimpse of the captive German Fleet. The lookout man at the masthead called down the tube to the captain's bridge: 'German Fleet in sight on the starboard bow.' We were fifty miles out to sea east of the opening of the Firth of Forth. '*Der Tag*,' murmured the chief yeoman of signals, as he leveled his telescope on the incredible thing. First of all we saw a kite balloon towed along by the *Cardiff*, our light cruiser, in the proud job of marshaling the prisoners. Behind the *Cardiff* we saw a faint silhouette, dark gray against the gray haze, like something cut out of paper. '*Seydlitz*,' said an officer. 'When I saw her last she was fairly battered. Jutland.' So the five battle cruisers were marching first to prison.

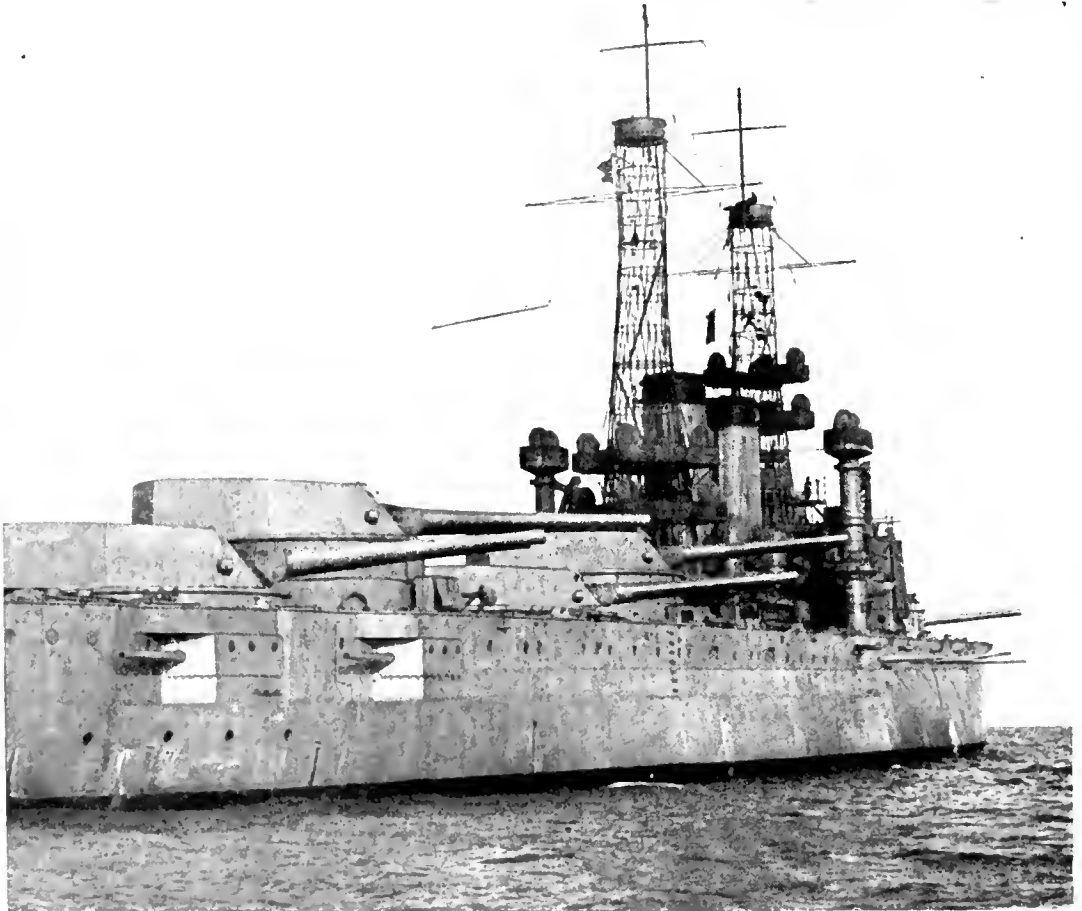
"Over the *Seydlitz* one of our North Sea airships kept watch and ward. The leading German ships showed great plumes of smoke. After the *Seydlitz* came the *Moltke*, *Derfflinger*, *Hindenburg*, and *Von der Tann*. They were about three miles from us.

"'What a target!' said our captain regretfully, as he made a rapid calculation of how long it would take our thirty-three battleships to sink their nine. The nine now loomed out of the haze, all moving as at some peaceful

maneuvers. They were in this order: *Friedrich der Grosse*, flying the flag of Admiral von Reuter; *Kaiser*, *Koenig Albert*, *Prinz Regent Luitpold*, *Kaiserin*, *Bayern* (the very latest), *Grosser Kurfürst*, *Markgraf*, *Kronprinz Wilhelm*.

"There was a gap of three miles between the battleships and the seven light cruisers.

icent and also ignominious. Soon after they were visible the sun burst out fully and made a path of rippling dazzle between us and the Germans. The phlegm of the British sailor was proof even against this miracle. Round me the officers were calmly identifying the ships from their silhouette-books—'See the *Derfflinger's* tripod masts,' and so on. Our sailors



© E. Muller, Jr.

The Battleship *Arkansas* Cleared for Action

One of the five American battleships that made up the mighty Armada the day the German Navy was surrendered.

These we could not see at all, nor the fifty German destroyers, all of the latest type, that closed the pageant. The light cruisers were: *Karlsruhe*, *Frankfurt*, *Emden* (the successor to the famous raider), *Nürnberg*, *Brummer*, *Köln*, and *Bremse*.

COMMENT OF THE BRITISH

"The grandest sight was that of the nine battleships towering in the misty light—magnif-

showed no emotion at all. There was not a cheer in all the British Fleet, although everywhere, on every turret and ledge, the men stood thickly, gazing silently or with some casual jest. One man who said to me, 'This is what we've been waiting for all these years,' was an exception. The sailorman thought of peace to come and leave at last. There was chivalry in his heart for a beaten foe. I heard one say: 'It's a fine sight, but I wouldn't be on one of them

ships for the world.' An officer said to me: 'We all feel this is an unparalleled humiliation to a great fleet. The High Sea Fleet has fought well, and we have nothing against it. The submarines are another story. We have won the greatest and the most bloodless victory in the history of the world. That's enough. No mafficking on the sea.'

OF WHAT WERE THE GERMANS THINKING?

"Of what were the Germans aboard those ships thinking? Three miles away on either side they watched our noble lines stretching far before and behind, shepherding them to an alien anchorage. The German ships advanced into the jaws of the fleet until the leading ship was level with Admiral Beatty's flagship, which came last as we went to sea, so that when we turned she would head the line into harbor. At this moment, ten minutes past ten, it was time for us to turn. A signal ran down the fleet, and at once each division of ships turned outwards and round until the line was re-formed for the homeward journey.

"This was a beautiful thing to see. Each ship swept round with parade precision, furling up a wide wake all white and green as it turned. The sun caught everything that could shine, and lit up the flags at the masts. The *Queen Elizabeth* was resplendent, all her silvery bulk flecked with white and crimson. In her wake followed the *Oak*, the Commander-in-Chief's destroyer; after the *Queen Elizabeth*, the *Orion*, *Thunder*, my ship; the *Monarch*, and the rest of the Second Battle Squadron.

"The *Queen Elizabeth* led the squadron in the culminating display, as she does when the fleet goes into battle. Looking back at one moment I saw a score of battleships all changing course simultaneously. This movement gave the finest of a day's impression of great strength and grace. From every fortress there spread a banner of smoke. One resplendent picture hid a nation's tragedy—a blue dancing sea, gray-blue ships, flags flying, and quiet satisfaction in every man's heart aboard. So complete was the triumph that the humane mind of the British seamen had thoughts to spare of pity, of fellow feeling.

"The whole scene lightened and became gay. The crews left their battle stations and popped on deck for a view. Bugles blew, flags whipped out, the silvery 'blimp' warship circled about the fleet, apparently joy-riding. One of her men was seen dangling his legs over the platform side and waving to the Navy. The throb of her

propeller was heard. The 'blimp' was having a jaunt now that her task of submarine spotting is over.

THE SEA LIKE A CHESS-BOARD

"An amazing spectacle was the show of destroyers. When the German heavy ships were approaching their anchorage, the last and largest section of the imprisoned fleet, the fifty modern destroyers, were only coming into view. The fifty were escorted by three times their number of fast British destroyers. The two hundred vessels came along in lines of five abreast with the Germans safe in the middle. Clear as the sky was at that time, the destroyers covered so vast an area that the rear of the procession could not be seen. The sea was covered with the array as a chess-board is with the pieces.

"Shortly before the armada drew in again to the entrance there was a transformation. The southernmost of the escorting lines turned once more and filed in behind the German Fleet, a beautifully executed maneuver. Off May Island the whole order was rearranged. Our northern line forged quickly ahead to Rosyth, leaving the German ships to be shown to their anchorage and inspected by the ships of the First Battle Cruiser Squadron. Admiral Beatty's order ran: 'The German flag will be lowered at sunset and will not be hoisted again without permission.' Before we left the High Sea Fleet behind the *Monarch* came so close that the rows of German sailors could be seen clustered on turret and forecastle. The Germans were witnesses of a scene that must have been a bitter drop in the cup. They heard the British Fleet cheering its commander. As each battleship swept past the *Queen Elizabeth* the crews mustered on the decks thundered out three cheers. The Chief stood on his bridge saluting. A cheerfully camouflaged cruiser, packed with men, rushed past the flagship making a noise. The Germans in the background were sad spectators of this climax to our joy. It might have cheered them a little to hear the British officer saying: 'What magnificent ships!' Admiration was universal throughout the fleet, especially for the *Hindenburg*, the latest thing in battle cruisers. A sailor put it naively: 'Why, you can't tell them from ours.' The day ended on every ship with a service of thanksgiving to God for our triumph.

SUNDOWN ON THE FLAGSHIP

"The strangest contrast of the day came at sunset—four o'clock. At that time the Ad-

miral's flagship was back at her moorings above the bridge; the luckless German Fleet was safe in custody. At sundown on the flagship of the Grand Fleet all hands were piped aft. Men and officers assembled, expecting a speech from Admiral Beatty to mark 'the end of a perfect day.' As they were still waiting a bugle rang out forward, and instantly several hundred men turned round like one and saluted the flag. The bugler was 'making the sunset' in accordance with the old Navy custom by which the end of day is signalized whether in war or peace. As the last note of the call died down the ship's company again turned aft, and on the call of the commander gave three stunning cheers for the Commander-in-Chief. Sir David Beatty, who was standing in the stern of the ship, replied conversationally, 'Thank you,' adding in the same breath, 'I always told you they would have to come out.' Men and officers responded with a chuckle of acquiescence, and in less than half a minute everybody was back at duty or pleasure.

"That was the scene above the bridge; the culminating triumph, quiet as always in the Navy, but very real.

THE LAST SCENE OF ALL—THE GERMAN ENSIGN LOWERED ON 71 SHIPS

"At the same moment, seven miles below the bridge, the last-scene curtain was falling on the German drama off May Island, which sentinels the entry into the Firth. Seventy-one German ships lay at anchor powerless in the grip of the conqueror. In a semicircle round the only outlet lay British ships, cruisers and destroyers. At the moment when on the flagship the bugle rang joyously out and the Commander-in-Chief was being cheered, the German ensign came fluttering down at the order of that same man, maybe never to be hoisted again. The seaplanes in the dusk were hovering overhead. The British key was turned on the flower of the German Fleet. Woe to the vanquished!

"The King and the Prince were with us to give us a send-off. From the captain's bridge of the *Monarch* I watched the King making the round of the ships. He stood high on the top of the destroyer *Oak*, gravely saluting as he went down the stupendous array. The ships' men were ranked along the decks. It was a stately progress. Bugles sounded and the national tune drifted faintly over the water as one ship's band after another took it up, and as he came alongside each ship he was cheered from a thousand throats."

AN AMERICAN REPORTER ON THE TEXAS

ANOTHER account is that of an American reporter on the battleship *Texas* written for the New York *World*. From a foregoing narrative it is clear that someone had taken pains to circulate the story in Wilhelmshaven that the British sailors had all gone Bolshevik and refused to lift a hand against their "comrades" of the German Navy. This had apparently met with universal belief, and it seems as if the German tars had expected to enjoy a general love feast with the British under the red flag. The shock of reality and the lengths to which Bolshevism had corrupted German discipline are suggested in the newspaperman's story:

"There had never been any naval surrender in history like this. Spaniards, French, Russians—all came out, in similar circumstances of certain doom, and fought their ships to the end. They might have fought these ships, they might have scuttled them, a few brave souls at least might have put up a death-or-glory 'show' in the waters of the North Sea. But no. 'There's no use in it, it won't help us. So don't let's do it!' they may have argued."

The correspondent, on going aboard the *Texas* the evening before the day of the surrender, discovered that the attitude of the American Fleet toward the Teutonic *débâcle* was unconcern mixed with contempt. He writes:

"The five United States battleships forming the Sixth Battle Squadron of the Grand Fleet, *New York*, *Texas*, *Arkansas*, *Wyoming*, and *Florida*, clearly distinguishable from all other dreadnoughts by their lattice masts, lay in the Firth of Forth very nearly under the giant bridge spanning that waterway. As far as the eye could see in every direction there were dotted warships, while in and out coursed pin-naces and launches. Arrived at the top of the accommodation-ladder, the executive officer led me to the admiral's cabin—there being now no admiral aboard.

"ON WITH THE DANCE"

"Make yourself comfy and then come right along to the wardroom. We're having a sort

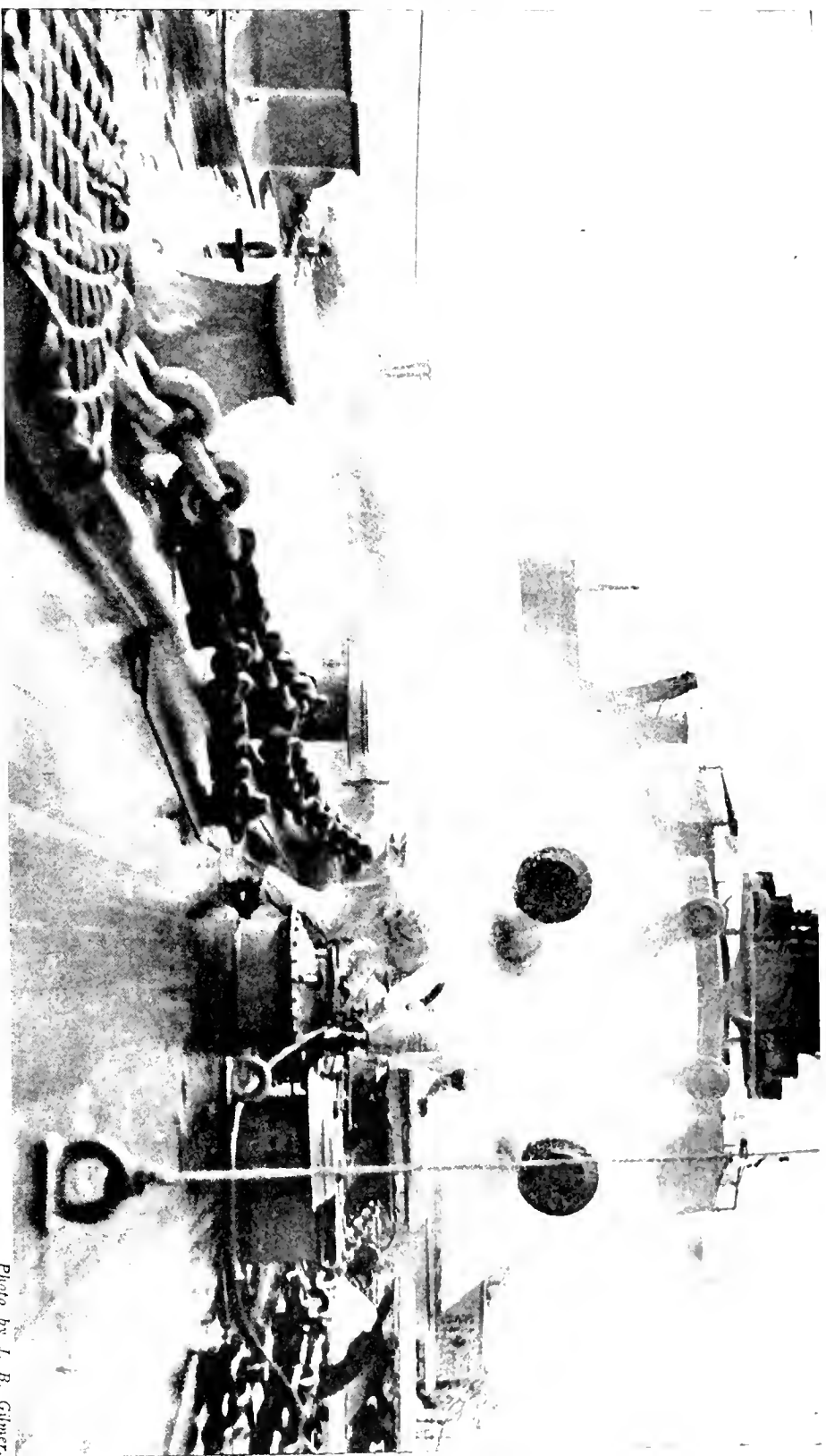


Photo by J. B. Glinner.

The Battleship *New York* Nosing Into a Storm

The *New York* is one of the American battleships that did "comradely service" in northern waters overseas with Admiral Beatty's fleet. The photograph shows her forward deck. The men are battening down the hatches.

of a hop.' I expected to find a score of officers, British and American, 'bunny-hugging' to a piano. Instead I came upon a score of pretty Englishwomen, officers' wives and daughters, fox-trotting with British and American officers to the strains of a jazz band. In one corner lay spread out the most ravishing pre-war tea of cream and sugar and butter and white bread and delightful cakes and dainties. . . . And so we trotted to jazz for the rest of the evening, on the *Texas*, while the Germans, in one winding *cortège* twenty miles long, were mournfully finding their way toward us, now guided clear of British mine-fields by wireless, now hesitating at mine-fields of their own, long since swept up by us. The Duke of Richmond's ball at Brussels the night before Waterloo was nothing to this. One lived each moment of each minute. The dramatic note was apt to be intense. What were those Germans doing, saying, thinking, out in the North Sea that night as we toasted *Der Tag* at dinner, and then repaired to a cinema show aboard? To get the angle, one must bear in mind that a man's ship is his home, his life, his all. The sailor's attitude to his ship is one of awed affection; his primitive instincts impel him to defend her as a lioness defends her cubs. And here were the Germans sailing on, on, on to surrender, to degradation, to Nemesis—while we jazz-trotted in unconcern."

READY FOR EMERGENCIES

Beatty's famous "operation order No. 22," showing that the British commander was going to take no chances with German trickery, was received and commented on. A young American officer explained to the correspondent:

"What we fear most is a stunt by a submarine manned entirely by officers. They might easily get a couple of our ships before being done in themselves. Any battle squadron that should be attacked has orders to scatter. The rest of the line will continue as if nothing had happened. But if a solitary gun-turret moves on the German surface ships, why the whole damned lot will be blown out of the water. . . . The whole business makes you want to sit up and rub your temples. First people I've ever met who couldn't be even kicked into a fight!"

"Five minutes later we were watching 'A Princess of the Blood' on the cinema and discussing movie stars. But this night of nights

it was impossible to get away from the business in hand. 'One of our patrol-boats has picked them up one hundred and fifty miles east of May Island. Quite behaving themselves,' announces a newcomer from the bridge. And one's thoughts going wandering again. Here was the Kaiser's dream vanishing every minute into the Scottish mists. A dying Navy—a Navy that had kept Europe from sleeping peacefully in its bed for nigh twenty years—a Navy built for trouble complete from its intricate U-boat microphones to its pretty women agents dotted around the capitals of Europe. And this was the end—steaming methodically toward us out of the night in complete surrender.

FORTY MILES OF SHIPS

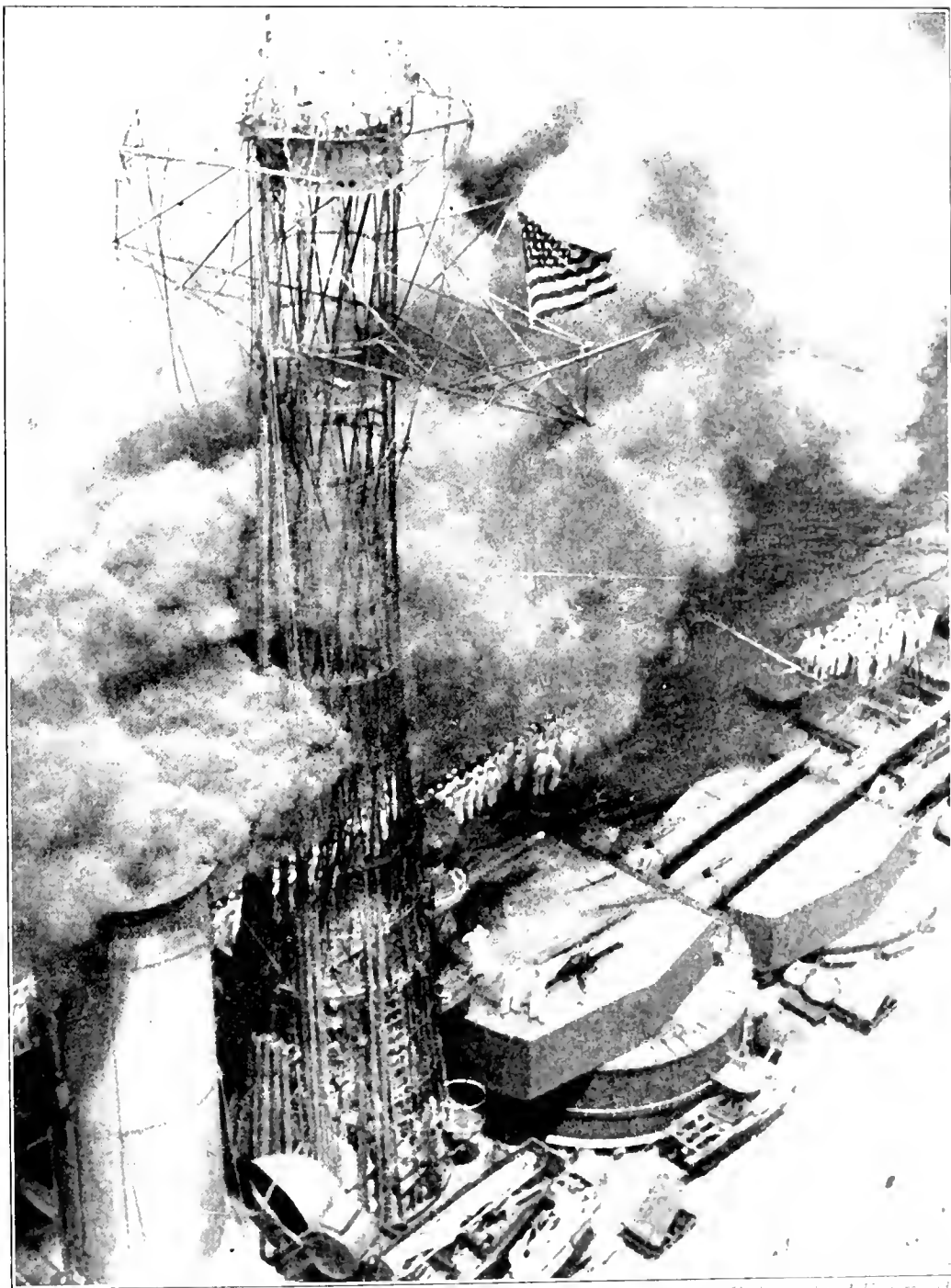
"So dawned The Day—a bloodless Trafalgar in which 47 battleships and battle cruisers, 35 cruisers and light cruisers, and 200 destroyers of the proud fleet, totaling perhaps 100,000 personnel and covering a stretch of water forty miles long by six wide, received the capitulation of fourteen German battleships and battle-cruisers, 6 light cruisers and 49 destroyers—manned by perhaps 17,000 officers and men under the nominal command of Admiral von Reuter, the real people in control being the lower deck.

"The first ships left the Firth of Forth in the chill mist of 2 a. m., and for the next four hours we passed out to sea in one incessant stream, Beatty bringing up the rear, and weighing anchor on his flagship at 6 a. m. Throughout those memorable hours the Commander-in-Chief kept the most intimate control of his armada by wireless. Not a ship of that vast gray company changed speed or direction without Beatty's permission. We sailed out line ahead in a dozen clusters, each series of vessels separated perhaps by two or three miles of water, and each ship by some five hundred yards. The speed was uniform—twelve knots an hour. . . .

BOLSHEVIK GERMAN SAILORS

"On board [the German ships], owing to the presence of Bolshevism, the position was an extraordinary one. The German crews lounged about, smoking, eating, and spitting in front of their officers. They only obeyed British officers!

"'Order these men out of this cabin,' said a British officer to a German captain, pointing



U.S. Navy, Bureau of Naval Affairs

The Battleship *Wyoming*

The *Wyoming* was one of the five United States battleships forming the Sixth Battle Squadron of the Grand Fleet, and witnessed the surrender of the German Fleet following the signing of the armistice. She is 562 feet in length, of 26,000 tons displacement and carries twelve 12-inch and twenty-one 5-inch guns.

to a group of *Soviet* sailors sporting their distinctive white arm-bands.

"'Order them!' sobbed the German at his desk, his head in his hands. 'Order them! They'd take no notice. I've been a prisoner in my cabin all the way across—like all the other officers.'

"The British officer took in the situation at a glance, faced the *Soviet* sailors, and in fierce rasping German ordered, '*Achtung!*'

"The Germans drew themselves to attention.

"'*Umkehren!*'

"The Germans turned about, facing the cabin-exit.

"'*Ein, zwei, drei—vorwärts!*'

"The Germans left the cabin.

"'They mutinied,' explained the German officer, 'because they heard your Grand Fleet was going to go in for Bolshevism too.'

"Bolshevism in the Grand Fleet! Red flags on the British and American dreadnoughts—I wonder how much the British Admiralty Intelligence had to do with circulating in Kiel and Cuxhaven those tales of British Fleet Bolshevism! One never knows.

"Saying good-by to the *Texas*, I turned to Captain Blue.

"'Your ship's company, sir, would, I gather, have preferred a fight.'

"'Well, I wouldn't. This has been the most signal victory in naval history, and I'd much prefer to bring my boys home to their mothers and sweethearts than leave them at the bottom of the North Sea.'

"If the German sailors imagined they were on a joy ride to these shores they are by now vastly disillusioned men. Three-quarters of them are to be sent back in German transports whence they came, the other quarter are going to spend a frozen winter of internment up in the Orkneys at Scapa, the most desolate, uninhabited, icy region of the British Isles. In due course they, too, will return to Germany—but not in their present ships.

"And so ends *Der Tag*. I have come away from the Grand Fleet with one dominant impression. Beatty has set out to show the Germans that they are outside the pale. Every word and act of this drama has been devoid of the faintest suggestion of *camaraderie* as between victor and vanquished. It must be a very terrible awakening for the late enemy. For, should Beatty's doctrine be widely accepted, this world is going to be a perfectly rotten place for Germans to live in for generations ahead."

A NAVY THAT LOST ITS MORALE

THUS a great Navy, one that aspired to control the seas, that stooped to the indiscriminate massacre of neutrals and non-combatants in order to gain its end, became in one day a mere collection of scrap iron in the hands of its enemy. It may be argued that there was nothing else for it to do with the odds against it, but the German Navy of an earlier day would have found something else to do. The *Scharnhorst* and the *Gneisenau*, for example, might have hauled down their colors in the face of hopeless odds at the battle of the Falklands, and the crew of the *Blücher*, who gathered on her reeling deck to sing the "Watch on the Rhine" might have surrendered the instant she became disabled in the action off the Dogger Bank. But the morale of these days was utterly gone in 1918. Pride in the Navy and devotion to the Fatherland, fanatical once, had degenerated to the animal selfishness of the Bolshevik, to whom, as to Falstaff, honor was a mere word.

A striking example of the depths to which these men had sunk is given by the crew of a submarine. This vessel had been purposely excepted by Admiral Beatty in his demand for surrender because it was known that her captain had consistently refused to attack merchantmen. But her crew brought her to Harwich along with the other surrendered U-boats in the hope that they might get the money reward that, during the war, the British Admiralty had offered to crews who should surrender their submarines. A German writer, commenting on this incident, observed bitterly, "We Germans can sink no lower." It was not only a nation's Navy that was surrendered on November 21, 1918, but a nation's self-respect. Nor was the matter improved in this respect when seven months later the interned German crews at Scapa Flow sank almost the entire fleet on the last day of the armistice, June 21, 1919.

Ships, guns, engines, range finders,—all these material things are necessary to a Navy, but no naval power can be reckoned by these alone. All naval history teaches the lesson that the fundamental source of power is the men. Thus the imposing battleships of the German Fleet, built with the finest skill of

design and construction and equipped with the best fighting devices in the world, trailed to an ignominious end in the hand of the enemy because their men had failed them. Despite the enormous mechanical advances of the modern day the thing that counts most is still what Farragut aptly called, "iron in the men."

THE GERMAN FLEET OF 1918

AN analysis of the major units of the German Navy as turned over to Admiral Beatty is given in detail by a writer in the *Scientific American*. A notable feature of this analysis, which is quoted below, is the emphasis on the construction plans of these German battleships, which resulted in their ability to keep afloat despite contact with mines, as in the case of the *Goeben*, and terrific concentration of gunfire, as in the case of the battle cruisers and battleships in the battle of Jutland.

QUALITY OF THE FLEET

"As to the quality of the surrendered fleet, there can be no dispute; for it includes the very latest of the battleship, cruiser and destroyer fleets—ships which are free from the defects which marked the earlier attempts of Germany to build up a first-class fighting force. Thanks to the policy of von Tirpitz, who believed that great volume of fire was more valuable than weight of fire, the earlier German ships, both in the battleship and cruiser, and even in the destroyer classes, carried guns that were considerably lighter than those mounted by contemporary ships of the same classes in other navies. Thus, at the opening of the war the standard gun in the main batteries of German battleships was an 11-inch piece; in the cruisers, a 5.9- and 4-inch gun, and in the destroyers, the 3-pounder. In the later German ships, commencing with the *Thuringen* class of 1909, the 12-inch gun makes its appearance; but at the opening of the war there was no heavier gun than this mounted in the German dreadnoughts. Corresponding ships in the Allied fleets mounted nothing less than the 12-inch, and the French, American and British fleets were carrying guns of 13.4-inch, 14-inch and 15-inch caliber.

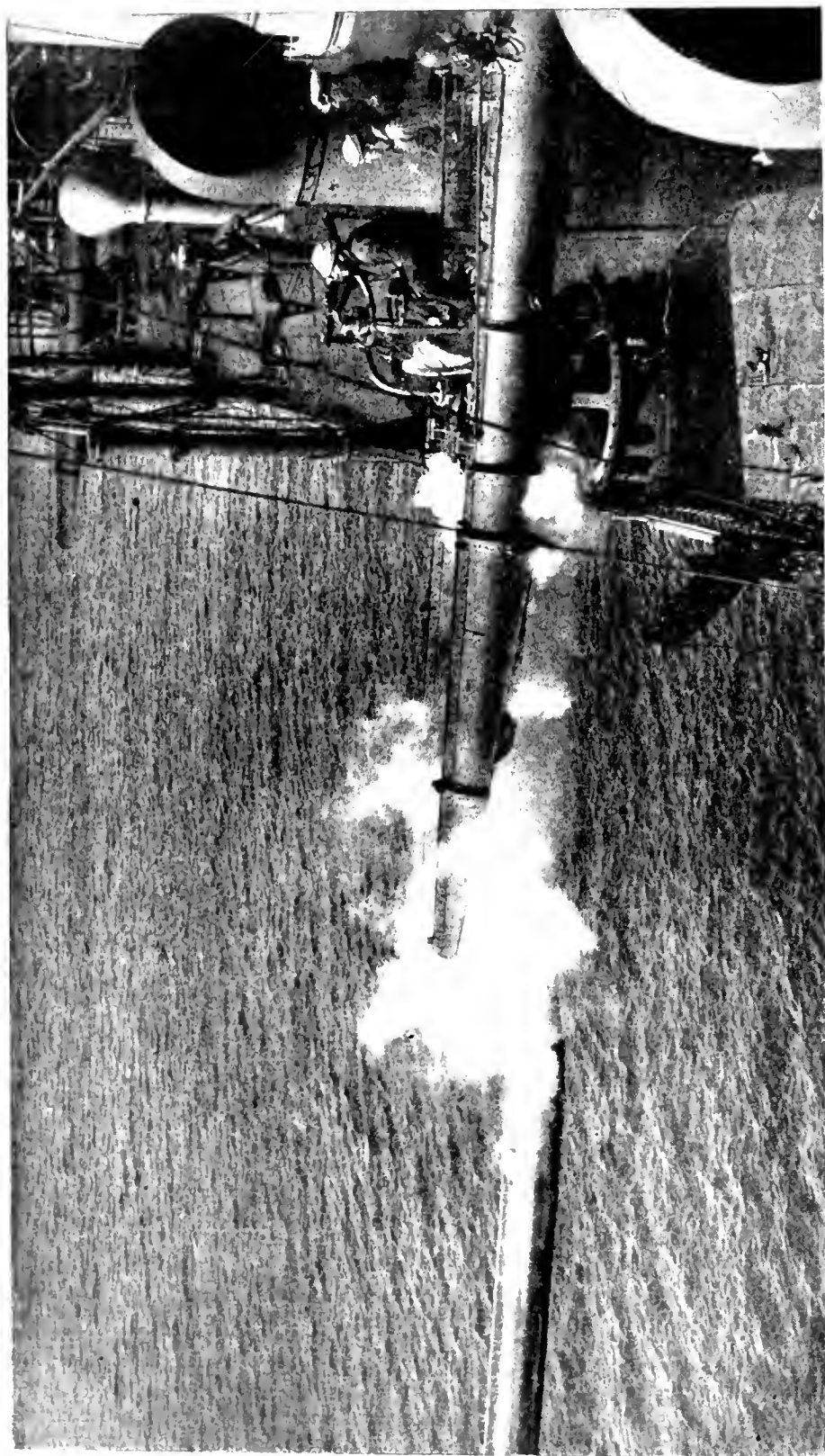
"If there was another broad defect, it was the crowded conditions on the German capital

ships, the allotment of batteries, torpedo tubes, and general gear, to say nothing of the size of the crews, being larger for a given displacement than would be allowed in British and American vessels.

"There can be no denying, either, that the Krupp guns are of excellent quality, and judging from the amazing rapidity with which the German dreadnoughts delivered their broadsides in the Jutland battle, and the accuracy of the fire, at least in the earlier stages of the engagement, it is unquestionable that they had worked out the problem of director-fire satisfactorily, and that their optical gear, in the way of rangefinders, telescopes, etc., was of a very high order. The British noticed that invariably the German fire at the outset of an engagement was rapid and accurate; but that, as soon as they themselves got the range of the German ships and began to land on them, the fire fell off and became very irregular and of relatively poor quality. This would indicate that they possessed some mechanical or electrical system of range finding, which made no provision, in case of heavy damage aboard ship, for individual gun-pointing.

FLOTATION

"Unquestionably, the Germans achieved the very greatest success in what, after all, is perhaps the most important of the elements which go to make up an effective fighting ship, namely, that of flotation, or what might be called comparative unsinkability. The underwater subdivision of their ships was worked out with great intelligence and skill. The double bottom was deep and the anti-torpedo spaces along the sides of the ship were unusually wide and well subdivided. To the mind of the writer, it was this feature which enabled the German ships in the battle of Jutland to take the terrific punishment which they received from the 13.5 and 15-inch guns of the British fleet, without going to the bottom. Admiral Jellicoe's report speaks of their registering on ships of the *Kaiser* and *Koenig* class and putting from five to seven successful straddles across individual ships. Captain Persius says that 'the losses of the German fleet were enormous, and on June 1st it was clear to every thinking man that the Skagerrak (Jutland) battle must be the only general engagement of the war.' Subdivision saved many a ship on that day. This conclusion is further borne out by the extraordinary case of the battle cruiser *Goeben*, which it is now reported was found to have been struck altogether by five mines. Since there were no



© E. Muller, Jr.

A Torpedo Leaving the Tube of an American Destroyer

The first division of American destroyers, under Commander Joseph K. Taussig, arrived at Queenstown on May 4, 1917, where it was welcomed by the British commander of the station, Sir Lewis Bayly. On being asked how long it would be before the Americans would be ready to go on patrol, Commander Taussig replied: "We are ready now!"

facilities for underwater repairs, it seems to be a fair inference that she was able to sustain this damage, even had it been done at one and the same time. The description of an eye-witness speaks of the inner bulkheads as bulging inwards under the pressure of the gases, but being of such excellent material that they did not break.

BATTLESHIPS

"The latest and most important ship of the surrendered fleet is the *Bayern*, laid down early in 1914 and completed during the war. She is a vessel presumably of 28,000 tons and was designed to carry eight 15-inch, 45-caliber, 10 5.9-inch and 12 3.4-inch guns. The next class in importance is the *Koenig* ships, including the *Koenig*, *Grosser Kurfuerst*, *Markgraf* and *Kronprinz Wilhelm*. These are of about 26,000 tons displacement and 20.5 knots contract speed. They mount 10 12-inch, 45-caliber guns, 14 5.9-inch, 10 3.4-inch and two 14-pounder automatics. Like the *Bayern* they are driven by turbines operating three screws. On all of these ships the belt is just under 14 inches in thickness, the same thickness of armor being carried on the turrets, with 15 inches on the fore conning tower and 10 inches on the after conning tower. The main belt is 14 feet deep and the sides above the belt, between the forward and after barbettes, are protected by six inches of armor. The *Koenig*, of this class, was to have been surrendered, but was in dry-dock at the time and could not be moved. These ships were completed in 1914 and 1915.

"The next class consists of the five ships, *Kaiser*, *Friedrich der Grosse*, *Kaiserin*, *Prinz Regent Luitpold* and *Koenig Albert*. The displacement is 24,500 tons, the horse-power 28,000 tons, and the contract speed 20.5 knots. It has been stated that these, in common with all the later battleships of the German Navy, have made considerably more than 20.5 knots on trial. They are armed with 10 12-inch, 50-caliber guns, 14 5.9-inch and 12 3.4-inch and two 14-pounder anti-aircraft guns. The ships of this and the *Koenig* class all carry five submerged torpedo tubes which fire the latest 22-inch German torpedo.

BATTLE CRUISERS

"Of the six battle cruisers given up on the signing of the armistice, only five were surrendered to Admiral Beatty. These are the *Hindenburg*, completed during the war and of about 28,000 tons and of a speed of about 28

knots. She carries eight 12-inch, 50-caliber guns, 12 5.9-inch, 12 3.4-inch and several anti-aircraft guns. Her torpedo outfit consists of five submerged tubes for firing the 22-inch torpedo.

"The *Derfflinger*, 26,500 tons and about 28 knots, carries eight 12-inch, 12 5.9-inch, 12 3.4-inch, and the usual anti-aircraft guns. The torpedo armament is similar to that of the *Hindenburg*. This ship and the *Hindenburg*, by the way, follow the American plan of mounting of the guns on the longitudinal axis of the ship. There are two turrets forward and two aft with superposed fire. In both of these ships, the belt armor has always been reputed to be 12 inches as against the usual six to eight inches on the battle cruisers of other navies.

"The *Seydlitz* and *Moltke* are practically sister ships, the former being of 25,000 tons, and the latter of 23,000 tons displacement. They are credited with an 11-inch belt and each carries a battery of 10 11-inch, 12 5.9-inch and 12 3.4-inch guns, with respectively five and four submerged torpedo tubes. The arrangement of the battery is one turret forward, one turret on each beam, placed *en echelon*, and two superposed turrets aft. The *Moltke* is familiar to residents of New York, where she lay for some weeks in the North River during a celebration in pre-war times. Both ships are credited with a speed of 28 knots on trial.

"The *Von Der Tann*, it seems, was not lost during the war, as came to be generally supposed. She was completed in 1910 and is a considerably smaller vessel than the other battle cruisers, her displacement being just under 20,000 tons. Her belt armor is nine inches and she carries an armament of eight 11-inch, 10 5.9-inch, and 16 3.4-inch guns, together with the usual torpedo battery.

"The other battle cruiser of the six surrendered on the signing of the armistice is the battle cruiser *Mackensen*. This vessel is not yet ready for sea and is to be given up at a later date. She is probably a sister ship to the *Hindenburg*.

SCOUT CRUISERS

"Among the scout cruisers surrendered are two recently commissioned vessels, the *Bremse* and *Brummer*, which have been designated as mine-laying scouts. They are of 4,100 tons displacement and 35-knot speed. They carry a battery of four 5.9-inch and eight 4.1-inch guns, and probably some anti-aircraft pieces. They are credited with a capacity, each of 480 mines.

Then there are the four ships of the *Emden* class, namely, *Emden*, *Karlsruhe*, *Nürnberg* and *Frankfurt*. These are of 5,400 tons, 30 knots, mount 10 5.9's and four 14-pounder anti-aircraft guns. Each carries 120 mines. The other two ships of the eight (not yet given up), are the *Köln* and possibly the *Königsberg*. The *Köln* is a new ship believed to be of 6,300 tons displacement and 33-knot speed, mounting two 8.2-inch and six 5.9-inch guns. The *Königsberg* is the ship that took the German naval peace delegates to the Grand Fleet. She is believed to be a vessel of the *Emden* type.

DESTROYERS AND SUBMARINES

"The armistice terms called for the delivery of 50 destroyers and 160 submarines. The 50 destroyers were delivered to Admiral Beatty on November 21st, and at the present writing 100 submarines, including the *U-153*, which was formerly the merchant ship *Deutschland*, have been surrendered and interned at Harwich on the east coast of England. Among these vessels were included several of the large cruiser submarines of which we have heard so much of late."



Drawn by George Wright.

Signaling at a Naval Training Camp

D
522
H35
v.4

THE LIBRARY
UNIVERSITY OF CALIFORNIA
Santa Barbara

THIS BOOK IS DUE ON THE LAST DATE
STAMPED BELOW.

Series 94-2



D 000 815 457 7

